



**Attend this course
to help keep your
herd healthy.**

“Preventative Animal Health”

Course offered by:

WVU Extension Service, Northeast SARE,
and Allegheny Veterinary Services

Where: 155 WVU Reedsville Farm Drive, Reedsville, WV

When: 3 Classroom Sessions Thu. Feb. 14, March 14, April 11 from 6:00 - 9:00 pm
1 Hands-on Session Tue., April 9 from 6:00 - 9:00 pm
(snow make-up dates will be the following Thursday or Tuesday)

Cost: \$25 covers all 4 sessions, resource materials, & refreshments

Sample Topics: Herd Health, Preventative Care, Nutrition, Telemedicine,
Smartphone Application, Recordkeeping, Vaccination
Protocols, Hands-on Injections,

Registration: Call the WVU Preston County Extension Office
304-329-1391

Animal Health Short Course

Agenda Session I February 14 (February 21, snow date)

- | | |
|-------------|---|
| 6:00 - 6:05 | Introduction (Shockey) |
| 6:05 - 6:30 | Value of preventative care (Harvey) |
| 6:30 - 7:15 | Importance of nutrition/minerals in Animal Health (Rayburn) |
| 7:15 - 7:30 | Break |
| 7:30 - 8:00 | Smartphone Application (Shockey/Hartley/Walker) |
| 8:00 - 9:00 | BQA - Topic to be determined (Shockey) |

WV law Section 30 10-3 Definitions

(w) "Veterinarian-client-patient relationship" means a relationship between a veterinarian, a client and a patient, and exists when:

(1) A veterinarian assumes responsibility for medical judgments regarding the health of an animal and the client who is the owner or other caretaker of the animal agrees to follow the veterinarian's instructions; or

(2) A veterinarian, through **personal examination** of an animal or a **representative sample of a herd** or flock, obtains sufficient information to make at least a general or preliminary diagnosis of the medical condition of the animal, herd or flock, which diagnosis is expanded through medically appropriate visits to the premises where the animal, herd or flock is kept.

Federal law Title 21 Part 530 Extralabel drug use. Subpart A general provisions. Section 530.3

(i) *A valid veterinarian-client-patient relationship* is one in which:

(1) A veterinarian has assumed the responsibility for **making medical judgments** regarding the health of (an) animal(s) and the need for medical treatment, and the client (the owner of the animal or animals or other caretaker) has agreed to follow the instructions of the veterinarian;

(2) There is **sufficient knowledge of the animal(s) by the veterinarian** to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s); and

(3) The practicing veterinarian is readily available for followup in case of adverse reactions or failure of the regimen of therapy. Such a relationship can exist only when the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of examination of the animal(s), and/or by medically appropriate and timely visits to the premises where the animal(s) are kept.

AVMA definitions:

A VCPR is present when all of the following requirements are met:

1. The veterinarian has assumed the **responsibility for making clinical judgments** regarding the health of the patient and the client has agreed to follow the veterinarians' instructions.
2. The veterinarian has **sufficient knowledge of the patient** to initiate at least a general or preliminary diagnosis of the medical condition of the patient. This means that the veterinarian is personally acquainted with the keeping and care of the patient by virtue of a **timely examination** of the patient by the veterinarian, or medically appropriate and timely visits by the veterinarian to the operation where the patient is managed.
3. The veterinarian is readily available for follow-up evaluation or has arranged for the following: veterinary emergency coverage, and continuing care and treatment.
4. The veterinarian provides oversight of treatment, compliance, and outcome.
5. Patient records are maintained.

Most veterinary practices say that a valid VCPR is having seen the herd in the past year.

Telemedicine:

Telemedicine can be a tool for a practice but not a separate discipline.

1. **3.3. VCPR in conjunction with the MVPA**

Section 5 of the AVMA Model Veterinary Practice Act clearly states the VCPR requirement in practicing veterinary medicine (see below), and the AP underscores the importance of these requirements even when utilizing telemedicine.

“No person may practice veterinary medicine in the State except within the context of a veterinarian-client-patient relationship.”

“A veterinarian-client-patient relationship cannot be established solely by telephonic or other electronic means.”

<https://www.avma.org/KB/Resources/Reports/Documents/Telemedicine-Report-2016.pdf>

Value of Veterinary Care

Jessica Harvey, DVM
Allegheny Veterinary Services
Elkins, WV

VCPR

- Having an established relationship with a veterinarian
- This sets up a veterinarian client patient relationship (VCPR)
- This is needed to allow for prescriptions to be dispensed
- It can also come in handy in emergency situations

Preventative care

- Preventative care includes vaccines, nutrition, herd checks, developing programs for receiving animals, and quick intervention when problems are noted
- An ounce of prevention is worth a pound of cure
- This statement remains true no matter what is being discussed

Vaccines

- Vaccine protocols can be developed for cows, calves, and bulls.
- Vaccines should be used prior to a herd developing disease.
- The cost of vaccinating a herd per a head is ~\$3.
- This can save on treating diseases where drug costs per a head could run from \$10-150.

Nutrition

- Nutrition is an important role in cattle health.
- Clean, fresh water can help cows and calves tremendously.
- Deficiencies can occur in our area from certain minerals.
- Liver biopsies can be performed to assess mineral status and determine what needs supplemented.
- We commonly see cases of selenium deficiency

Herd checks

- Herd checks can range from calf processing to pregnancy checks to bull breeding soundness exams.
- All of these services provide you with the knowledge throughout the year.

Deworming

- Resistance is coming to dewormers.
- Fecal Egg Counts should be performed prior to deworming.
- FEC reduction test can be done to monitor resistance to dewormers
- This can save you money in the long run.

Calf processing

- What is calf processing?
- Castrating the bulls.
- Vaccinating the calves.
- Deworming.
- Average cost per a head can run \$5-10 a head. This can increase the money brought a sale time.

Preg check

- Pregnancy checks can be performed after the bull has been removed 30 days or if a breeding date is known.
- Knowing how many open cows there are can lead to further investigating of diseases.
- Feeding an open cow can cost you anywhere from 500-1500 in today's market.
- Knowing approximate due dates can also allow you to group the cows for closer watch.

Breeding soundness exams

- This is performed on herd bulls to check their semen quality prior to being turned in with the cows.
- This can save a farmer a lot of money if they know that a bull may not be able to get the job done.
- Cost ranges from \$40-50 for the BSE.
- Cost of open cows and no calves can be determinital to a farm.
- Trich testing is beneficial

Stockers and backgrounding

- Knowing the vaccine status and if that status is negative can play a role.
- Vaccinating upon arrival if buying from livestock auctions (local salebarn).
- Waiting a 2-3 weeks before castrating and dehorning the new arrivals.
- Allow the calves to trust you.
- Provide clean, fresh water.

Advance reproductive techniques

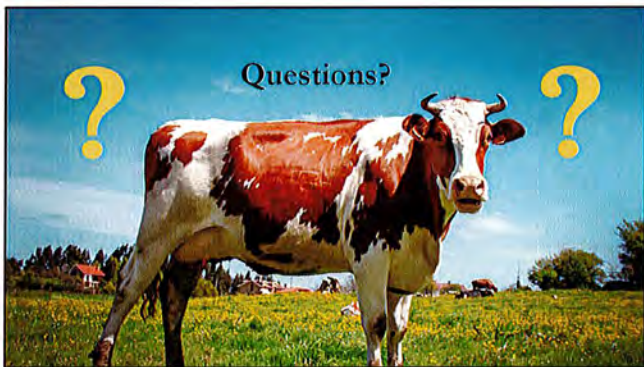
- Artificial insemination of cattle can be performed.
 - This allows for different genetics to be brought into a herd without buying a bull.
 - Know what your goals are.
- Embryo transfer can be performed.
 - This can be done for progeny of a high producing cow
 - This is expensive.

References

- Salman, MD et al. "Costs of veterinary services and vaccines/drugs used for prevention and treatment of diseases in 86 Colorado cow-calf operations participating in the National Animal Health Monitoring System (1986-1988)." *JAVMA*, vol. 198, no. 10, May 15, 1991, pg. 1739-44

References

- Jones, Lee, "What Should Cattle Producers Expect from Their Vet?", <http://www.beefusa.org/CMDocs/BeefUSA/VFD%20What%20to%20Expect.pdf>
- https://coststudyfiles.ucdavis.edu/uploads/cs_public/4c/e1/4ce1d18c-9b26-4bed-995d-94bc3d8a7d86/18beefcowcalfcentralcoast81018.pdf



Nutrient Requirements for Beef Cattle

Ed Rayburn, Extension Specialist
September 2013

Beef cattle production, using pasture and hay crops, is a major agricultural enterprise in West Virginia. It enables producers to convert solar energy to hamburgers and steaks using their management abilities and the genetic resources in their forage crops and livestock. This is accomplished in context with their land's soils and the ability of different forage species to grow best in different parts of the landscape. The forage manager develops a forage system consisting of fences, water sources, and management practices that optimize the use of these forages. Livestock genetics and management practices are selected that work best within the forage system to meet the product quality desired by the market. By grazing pastures and aftermath hay meadows, fuel and machinery costs are kept low, with solar energy being used to power the cow in harvesting her own feed.

Well-managed forage crops provide the energy, protein, and minerals needed by most classes of beef cattle. At times, supplemental feeds can improve animal performance or health when forage quality is not adequate. Grazing and haying management determine forage quality, the livestock's intake of forage dry matter, and the total intake of available nutrients from the forage. The animal's intake of nutrients from home-grown forage, its nutrient requirements, the supplement's cost, and the expected improvement in animal performance determine the economic benefit from feeding supplements.

Animal nutritional requirements are divided into the needs for body maintenance, activity, growth or change in body condition, milk production, fetal growth, and maintenance of body temperature during cold or hot weather. If the manager wants to improve or upgrade one of these production components, then the nutrition to sustain it must be satisfied.

The following tables of beef cattle nutrient requirements along with forage analysis of pasture and hay crops produced on the farm will enable the livestock manager to evaluate improvements needed in forage and livestock management and develop optimal supplemental feeding strategies for their animals. These table values have been adapted from the National Research Council's Nutrient Requirement of Beef Cattle, 2000.

Nutrient requirements for mature beef cows.								
Body Weight lbs	Avg. Daily Gain lbs	Dry Matter Intake lbs	Crude Protein %	Crude Protein lbs	TDN %	TDN lbs	Ca %	P %
Dry pregnant mature cows, middle third of pregnancy.								
900	0.0	16.7	7.0	1.2	49	8.2	0.18	0.18
1000	0.0	18.1	7.0	1.3	49	8.8	0.18	0.18
1100	0.0	19.5	7.0	1.4	49	9.5	0.19	0.19
1200	0.0	20.8	6.9	1.4	49	10.1	0.19	0.19
1300	0.0	22.0	6.9	1.5	49	10.8	0.20	0.20
1400	0.0	23.3	6.9	1.6	49	11.4	0.20	0.20
Dry pregnant mature cows, last third of pregnancy.								
900	0.9	18.2	8.0	1.5	54	9.8	0.27	0.21
1000	0.9	19.6	7.9	1.6	54	10.5	0.26	0.21
1100	0.9	21.0	7.8	1.6	53	11.2	0.26	0.21
1200	0.9	22.3	7.8	1.7	53	11.8	0.26	0.21
1300	0.9	23.6	7.7	1.8	53	12.5	0.26	0.21
1400	0.9	24.9	7.6	1.9	53	13.1	0.26	0.21
Cows nursing calves, average milking ability (10 lbs milk/day), first 3-4 months postpartum.								
900	0.0	18.8	9.9	1.9	57	10.8	0.28	0.22
1000	0.0	20.2	9.6	2.0	57	11.5	0.28	0.22
1100	0.0	21.6	9.4	2.0	56	12.1	0.27	0.22
1200	0.0	23.0	9.3	2.1	56	12.8	0.27	0.22
1300	0.0	24.3	9.1	2.2	55	13.4	0.27	0.22
1400	0.0	25.6	9.0	2.3	55	14.0	0.27	0.22
Cows nursing calves, superior milking ability (20 lbs milk/day), first 3-4 months postpartum.								
900	0.0	18.7	12.9	2.4	70	13.1	0.41	0.28
1000	0.0	20.6	12.3	2.5	67	13.8	0.39	0.27
1100	0.0	22.3	11.9	2.6	65	14.5	0.38	0.27
1200	0.0	23.8	11.5	2.7	64	15.2	0.36	0.26
1300	0.0	25.3	11.2	2.8	63	15.9	0.36	0.26
1400	0.0	26.7	11.0	2.9	62	16.5	0.35	0.26

Nutrient requirements of bred heifers.								
Body Weight lbs	Avg. Daily Gain lbs	Dry Matter Intake lbs	Crude Protein %	Crude Protein lbs	TDN %	TDN lbs	Ca %	P %
For pregnant yearling heifers, middle third of pregnancy see growing heifers.								
Pregnant yearling heifers, last third of pregnancy.								
700	0.9	15.3	8.4	1.3	55.4	8.5	0.27	0.20
	1.4	15.8	9.0	1.4	60.3	9.5	0.33	0.21
	1.9	15.8	9.8	1.5	67.0	10.6	0.33	0.21
800	0.9	16.8	8.2	1.4	54.8	9.2	0.28	0.20
	1.4	17.4	8.8	1.5	59.6	10.4	0.33	0.21
	1.9	17.5	9.3	1.6	66.1	11.6	0.35	0.21
900	0.9	18.3	8.1	1.5	54.3	9.9	0.26	0.20
	1.4	19.0	8.5	1.6	59.1	11.2	0.30	0.21
	1.9	19.2	9.0	1.7	65.4	12.6	0.32	0.21
Two year old heifers nursing calves first 3-4 months postpartum, 10 lbs milk/day.								
700	0.5	15.9	11.3	1.8	65.1	10.4	0.36	0.24
800	0.5	17.6	10.8	1.9	63.8	11.2	0.34	0.24
900	0.5	19.2	10.4	1.9	62.7	12.0	0.32	0.23
1000	0.5	20.8	10.0	2.1	61.9	12.9	0.31	0.23

Nutrient requirements for growing medium frame steers.								
Body Weight lbs	Avg. Daily Gain lbs	Dry Matter Intake lbs	Crude Protein %	Crude Protein lbs	TDN %	TDN lbs	Ca %	P %
300	0.5	7.8	9.6	0.8	54	4.2	0.31	0.20
	1.0	8.4	11.4	1.0	59	4.9	0.45	0.24
	1.5	8.7	13.2	1.1	63	5.5	0.58	0.28
	2.0	8.9	14.8	1.3	68	6.0	0.72	0.32
	2.5	8.9	16.7	1.5	74	6.5	0.87	0.37
	3.0	8.0	19.9	1.6	85	6.8	1.13	0.47
400	0.5	9.7	8.9	0.9	54	5.2	0.27	0.18
	1.0	10.4	10.3	1.1	59	6.1	0.38	0.21
	1.5	10.8	11.5	1.2	63	6.8	0.47	0.25
	2.0	11.0	12.7	1.4	68	7.4	0.56	0.26
	2.5	11.0	14.2	1.6	74	8.1	0.68	0.30
	3.0	10.0	16.6	1.7	85	8.5	0.86	0.37
500	0.5	11.5	8.5	1.0	54	6.2	0.25	0.17
	1.0	12.3	9.5	1.2	59	7.2	0.32	0.20
	1.5	12.8	10.5	1.3	63	8.1	0.40	0.22
	2.0	13.1	11.4	1.5	68	8.8	0.47	0.24
	2.5	13.0	12.5	1.6	74	9.6	0.56	0.27
	3.0	11.8	14.4	1.7	85	10.0	0.69	0.32
600	0.5	13.2	8.2	1.1	54	7.1	0.23	0.18
	1.0	14.1	9.0	1.3	59	8.2	0.28	0.19
	1.5	14.7	9.8	1.4	63	9.3	0.35	0.21
	2.0	15.0	10.5	1.6	68	10.1	0.40	0.22
	2.5	14.9	11.4	1.7	74	11.0	0.46	0.24
	3.0	13.5	12.9	1.7	85	11.5	0.57	0.29
700	0.5	14.8	7.9	1.2	54	8.0	0.22	0.18
	1.0	15.8	8.6	1.4	59	9.2	0.27	0.18
	1.5	16.5	9.2	1.5	63	10.4	0.31	0.20
	2.0	16.8	9.8	1.7	68	11.3	0.34	0.21
	2.5	16.7	10.5	1.8	74	12.3	0.40	0.22
	3.0	15.2	11.7	1.8	85	12.9	0.49	0.26
800	0.5	16.4	7.7	1.3	54	8.9	0.22	0.17
	1.0	17.5	8.3	1.4	59	10.2	0.24	0.19
	1.5	18.2	8.8	1.6	63	11.5	0.28	0.19
	2.0	18.6	9.2	1.7	68	12.6	0.31	0.20
	2.5	18.5	9.8	1.8	74	13.6	0.35	0.21
	3.0	16.8	10.8	1.8	85	14.3	0.42	0.25

Nutrient requirements of growing medium frame heifers.								
Body Weight lbs	Avg. Daily Gain lbs	Dry Matter Intake lbs	Crude Protein %	Crude Protein lbs	TDN %	TDN lbs	Ca %	P %
300	0.5	7.5	9.6	0.8	56	4.2	0.29	0.21
	1.0	8.0	11.4	1.0	62	5.0	0.44	0.22
	1.5	8.2	13.1	1.1	69	5.6	0.59	0.27
	2.0	8.0	15.1	1.3	77	6.2	0.74	0.33
400	0.5	9.3	8.9	0.9	56	5.2	0.26	0.19
	1.0	9.9	10.2	1.1	62	6.1	0.36	0.20
	1.5	10.2	11.4	1.2	69	7.0	0.45	0.24
	2.0	10.0	12.9	1.4	77	7.7	0.57	0.29
500	0.5	11.0	8.5	1.0	56	6.2	0.24	0.18
	1.0	11.8	9.4	1.2	62	7.3	0.30	0.21
	1.5	12.1	10.3	1.3	69	8.3	0.38	0.22
	2.0	11.8	11.4	1.5	77	9.1	0.45	0.24
600	0.5	12.6	8.1	1.1	56	7.1	0.23	0.18
	1.0	13.5	8.8	1.3	62	8.4	0.28	0.20
	1.5	13.8	9.5	1.4	69	9.5	0.32	0.21
	2.0	13.5	10.4	1.6	77	10.4	0.38	0.23
700	0.5	14.1	7.9	1.2	56	7.9	0.22	0.19
	1.0	15.1	8.4	1.4	62	9.4	0.25	0.19
	1.5	15.5	9.0	1.5	69	10.6	0.28	0.20
	2.0	15.2	9.6	1.7	77	11.7	0.32	0.22
800	0.5	15.6	7.7	1.3	56	8.7	0.21	0.18
	1.0	16.7	8.1	1.4	62	10.4	0.22	0.18
	1.5	17.2	8.5	1.6	69	11.8	0.24	0.19
	2.0	16.8	9.0	1.7	77	12.9	0.28	0.20
1000	0.5	18.5	7.4	1.4	56	10.4	0.20	0.19
	1.0	19.8	7.6	1.5	62	12.3	0.20	0.18
	1.5	20.3	7.8	1.6	69	13.9	0.21	0.18
	2.0	19.8	8.1	1.6	77	15.2	0.22	0.19

Suggested mineral and vitamin requirements of beef cattle.
(Adapted from Nutrient Requirements of Beef Cattle, National Research Council, 2000.)

Mineral	Growing and Finishing	Cows		Maximum Tolerable Level
		Gestation	Early Lactation	
Cobalt (Co), ppm	0.10	0.10	0.10	10.0
Copper (Cu), ppm	10	10	10	100
Iodine (I), ppm	0.50	0.50	0.50	50.0
Iron (Fe), ppm	50	50	50	1000
Magnesium (Mg), %	0.10	0.12	0.20	0.40
Manganese (Mn), ppm	20	40	40	1000
Molybdenum (Mo), ppm				6
Potassium (K), %	0.60	0.60	0.70	3
Selenium (Se), ppm †	0.10	0.10	0.10	2
Sodium (Na), %	0.06-0.08	0.06-0.08	0.10	--
Sulfur (S), %	0.15	0.15	0.15	0.40
Zinc (Zn), ppm	30	30	30	500
Vitamin A IU/kg	2200	2800	3900	--
Vitamin D IU/kg	275	275	275	--

† It is legal to supplement Se to beef cattle at the level of 0.30 mg/kg of the total diet up to 3 mg /head/day (NRC Beef Update 2000, p.68).

nutritional requirement. If the exact value of interest is not listed, interpolate between listed values that are above and below the value of interest. For practical purposes, when using the percentile ranking tables, rounding to the nearest 5% is reasonable.

Table 1. Number of samples (N), mean, and variability as measured by the standard deviation (SD), minimum (min), and maximum (max) of collected hay samples.

	Measure	N	Mean	SD	Min	Max
Carbohydrates Protein and Calculated Values	ADF	1214	42.1	4.7	21.0	51.8
	ADF/NDF	1200	0.65	0.05	0.49	0.85
	CP	1213	11.5	3.4	5.8	32.3
	CP/TDN	1213	0.21	0.05	0.10	0.38
	DM	1187	79.6	14.4	14.3	96.2
	Lignin	779	6.19	0.98	3.00	11.3
	NDF	1200	64.9	6.6	34.5	79.3
	NSC	825	13.4	4.7	0.1	31.5
	TDN	1214	55.4	4.8	41.0	73.0
Macro Minerals	Ash	779	7.68	0.94	5.00	15.1
	Ca	1209	0.648	0.246	0.140	1.860
	K	1211	1.82	0.47	0.15	3.42
	Mg	1202	0.198	0.100	0.060	1.970
	P	1201	0.285	0.076	0.080	0.630
	S	1082	0.169	0.040	0.050	0.42
Micro Minerals	Cu	148	7.05	1.56	4.00	15.00
	Fe	133	394	575	70	3510
	Mn	148	86.7	54.4	6.0	373.0
	Mo	63	4.36	10.31	0.20	60.00
	Zn	135	22.2	4.6	10.0	48.0

ADF – acid detergent fiber

DM – dry matter

NSC – non-structural carbohydrates

Ca – calcium

Fe – iron

Mg – magnesium

Mo – molybdenum

S – sulfur

CP – crude protein

NDF – neutral detergent fiber

TDN – total digestible nutrients

Cu – copper

K – potassium

Mn – manganese

P – phosphorus

Zn – zinc

Table 2. Mean, standard deviation (SD), minimum (Min) and maximum (Max) values of pasture measurements and sample analysis.

Item	Count	Mean	SD	Min	Max
Description					
Height	249	6.2	4.9	0.0	28.0
Fiber, Carbohydrates, Fats and Ash					
ADF	401	32.07	5.45	18.60	49.60
NDF	401	54.42	8.38	28.00	77.90
NSC	398	15.86	5.42	0.23	31.70
LIG	280	5.14	1.34	0.00	9.22
Fat	135	4.06	0.83	2.28	6.44
Ash	280	9.30	1.73	0.00	14.44
Protein (%)					
CP	566	18.4	4.8	4.8	34.6
SP (% of CP)	281	36.3	7.7	20.0	57.1
DP (% of CP)	280	66.6	6.0	39.2	78.0
Calculated Energy and Feed Values					
TDN %	401	63.2	5.6	31.0	75.9
NEM meg. cal.	384	0.64	0.10	0.00	0.83
NEG meg. cal.	399	0.37	0.08	0.11	0.54
Horse TDN %	195	57.8	7.6	43.4	82.0
RFV	399	113	26	65	243
Macro Minerals (%)					
Ca	606	0.68	0.22	0.21	1.94
P	607	0.34	0.09	0.10	0.59
Mg	607	0.25	0.06	0.11	0.58
K	607	2.46	0.58	0.33	4.50
S	440	0.24	0.06	0.05	0.48
Micro Minerals (ppm)					
Al	167	254	395	10	4172
Cu	589	10.9	4.4	2.0	55.0
Fe	589	403	465	45	4042
Mn	589	110	67	0	562
Mo	240	1.08	0.73	0.13	3.96
Na	585	0.24	5.00	0.00	121.00
Zn	588	34.7	30.8	11.0	384.8

Monongalia Livestock Improvement Association Spring 2018

Ingredients	Preferred Mineral Source	Mon Summer Mix	Mon Hi Mag Mix w/Clarify	Mon Hi-Mag	Mon Sheep Mix	Mon TM Salt
Calcium min.	Dicalcium Phosphate	12%	12%	12%	12%	--
Phosphorus	Dicalcium Phosphate	6%	6%	6%	6%	--
Magnesium	Magnesium Oxide	1%	8%	8%	8%	--
Salt max.	---	--	--	---	--	---
Salt min.	---	30%	30%	30%	20%	80%
Cobalt min.	---	12 ppm	12 ppm	12 ppm	22 ppm	24 ppm
Copper min.	Copper Sulfate	400 ppm	400 ppm	400 ppm	---	800 ppm
Copper min.	Copper Methionine	400 ppm	400 ppm	400 ppm		800 ppm
Iodine min.	Calcium Iodate	60 ppm	60 ppm	60 ppm	115 ppm	120 ppm
Iron min.	---	--	--	--	--	---
Zinc min.	Zinc Oxide	800 ppm	800 ppm	800 ppm	800 ppm	1600 ppm
Zinc min.	Zinc Methionine	800 ppm	800 ppm	800 ppm	800 ppm	1600 ppm
Manganese min.	---	1500 ppm	1500 ppm	1500 ppm	1500 ppm	3000 ppm
Selenium	Sodium Selenite	13 ppm	13 ppm	13 ppm	13 ppm	26 ppm
Selenium	Selenomethionine	13 ppm	13 ppm	13 ppm	13 ppm	26 ppm
Vitamin A	Protected	100,000 IU	100,000 IU	100,000 IU	100,000 IU	200,000 IU
Vitamin E	Protected	250 IU	250 IU	250 IU	250 IU	500 IU
Potassium	---	--	--	---	--	--
Sulfur	---	---	---	---	---	--
Other Added		---	Clarify 50mg/lb	---	---	---

Monongalia Livestock Improvement Association Fall 2018

Ingredients	Preferred Mineral Source	Mon Winter Hi-Mag	Mon Sheep Mix	Mon Winter Low-Mag	Mon Winter TM Salt	Mon Low-Mag w/ Bovatec
Calcium min.	Dicalcium Phosphate	12%	12%	8%	--	8%
Phosphorus	Dicalcium Phosphate	6%	6%	4%	--	4%
Magnesium	Magnesium Oxide	8%	8%	4%	--	4%
Salt max.	---	--	--	---	---	---
Salt min.	---	30%	20%	30%	80%	30%
Cobalt min.	---	12 ppm	22 ppm	12 ppm	24 ppm	12 ppm
Copper min.	Copper Sulfate	400 ppm	...	400 ppm	800 ppm	400 ppm
Copper min.	Copper Methionine	400 ppm	----	400 ppm	800 ppm	400 ppm
Iodine min.	Calcium Iodate	60 ppm	115 ppm	60 ppm	120 ppm	60 ppm
Iron min.	---	--	--	--	---	---
Zinc min.	Zinc Oxide	800 ppm	800 ppm	800 ppm	1600 ppm	800 ppm
Zinc min.	Zinc Methionine	800 ppm	800 ppm	800 ppm	1600 ppm	800 ppm
Manganese min.	---	1500 ppm	1500 ppm	1500 ppm	3000 ppm	1500 ppm
Selenium	Sodium Selenite	13 ppm	13 ppm	13 ppm	26 ppm	13 ppm
Selenium	Selenomethionine	13 ppm	13 ppm	13 ppm	26 ppm	13 ppm
Vitamin A	Protected	200,000 IU	200,000 IU	200,000 IU	400,000 IU	200,000 IU
Vitamin E	Protected	500 IU	500 IU	500 IU	1000 IU	500 IU
Potassium	---	--	--	---	--	---
Sulfur	---	1%	1%	1%	--	1%
Other added		---	---	---	1400 gm/ton Bovatec

Body Condition Score Description of Cattle

Edward B. Rayburn, *WVU Extension Specialist – Agronomy*

Beef cattle body condition scores (BCS) are numbers used to estimate energy reserves in the form of fat and muscle. The score helps you determine the nutritional need of a beef cow. Use this chart to help you interpret the BCS of cows in your herd.

Body Condition Score	Body Fat Content	Appearance of Cow
1	4	Shoulder, rib, back, hook, and pin bones sharp to touch and easily visible; little evidence of fat deposits or muscling.
2	8	Spinous processes feel sharp to touch and are easily seen, with space between them; little evidence of fat deposits; some muscling in hindquarters.
3	11	Backbone highly visible, spinous processes individually felt and may be visible, space between processes less pronounced; beginning of fat cover over loin, back, and fore ribs.
4	15	Fore ribs not noticeable, 12 th and 13 th ribs can be seen, transverse spinous processes felt with slight pressure (they feel rounded); full but straightness of muscling in hindquarters.
5	19	Ribs 12 th and 13 th not visible, transverse spinous processes and space between can be felt with firm pressure (not visible); areas on sides of tail head fairly well-filled.
6	23	Ribs fully covered (not visible) firm pressure required to feel transverse processes; hindquarters full, noticeable sponginess over fore ribs and at sides of tail head.
7	26	Ends of spinous process felt only with firm pressure, spaces between barely distinguished; abundant fat cover on sides of tail head with some patchiness evident.
8	30	Bone structure disappearing, body taking on a smooth, blocky appearance; fat cover thick and spongy.
9	34	Bone structure not seen or easily felt; tail head buried in fat, animal's mobility may be impaired by excess fat.

Examples of Scores



BCS 4



BCS 5-



BCS 5



BCS 7+

Adapted from NRC Nutrient Requirements of Beef Cattle, 2000.

Updated October 2013. For more information, contact author at Ed.Rayburn@mail.wvu.edu.
www.ext.wvu.edu

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AG13-355



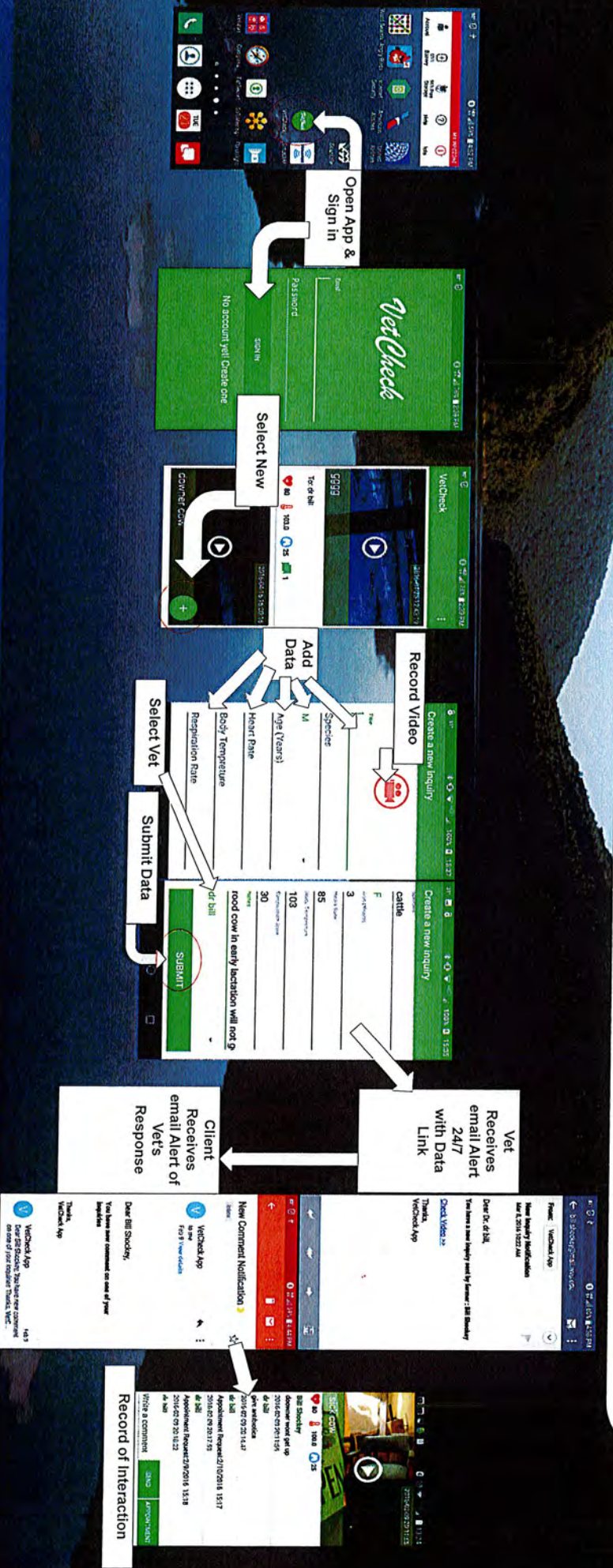
There's An App For That!! -- Smartphone Application

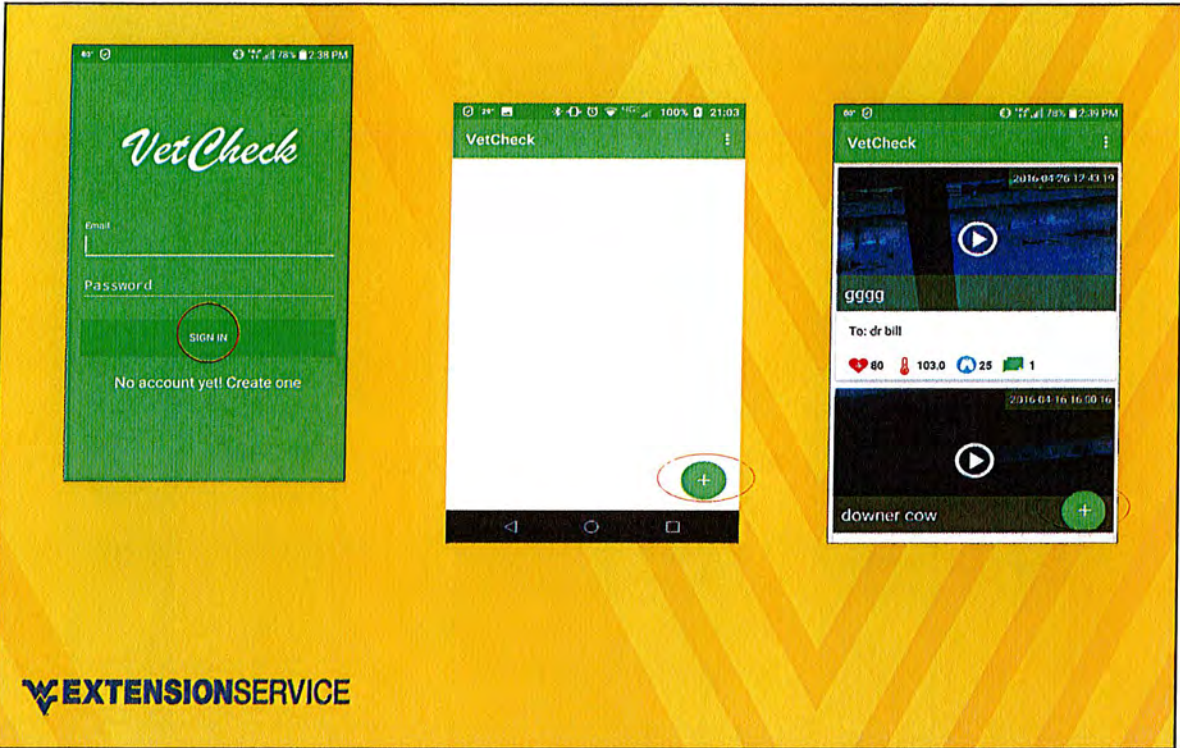
Shockey, W.L.¹; Jazaery, M.A.²; Wu, J.³; Guo, G.⁴; Moran, D.D.⁵

¹Extension Agent, West Virginia University, Kingwood, WV, 26537 / bill.shockey@mail.wvu.edu
²Student, Dept. of Computer Science and Electrical Engineering, West Virginia University, Morgantown, WV, 26506
³Visiting Scholar, Dept. of Computer Science and Electrical Engineering, West Virginia University, Morgantown, WV, 26506
⁴Associate Professor, Dept. of Computer Science and Electrical Engineering, West Virginia University, Morgantown, WV, 26506
⁵Farmer, Crimson Shamrock Ranch, Eglon, WV, 26716

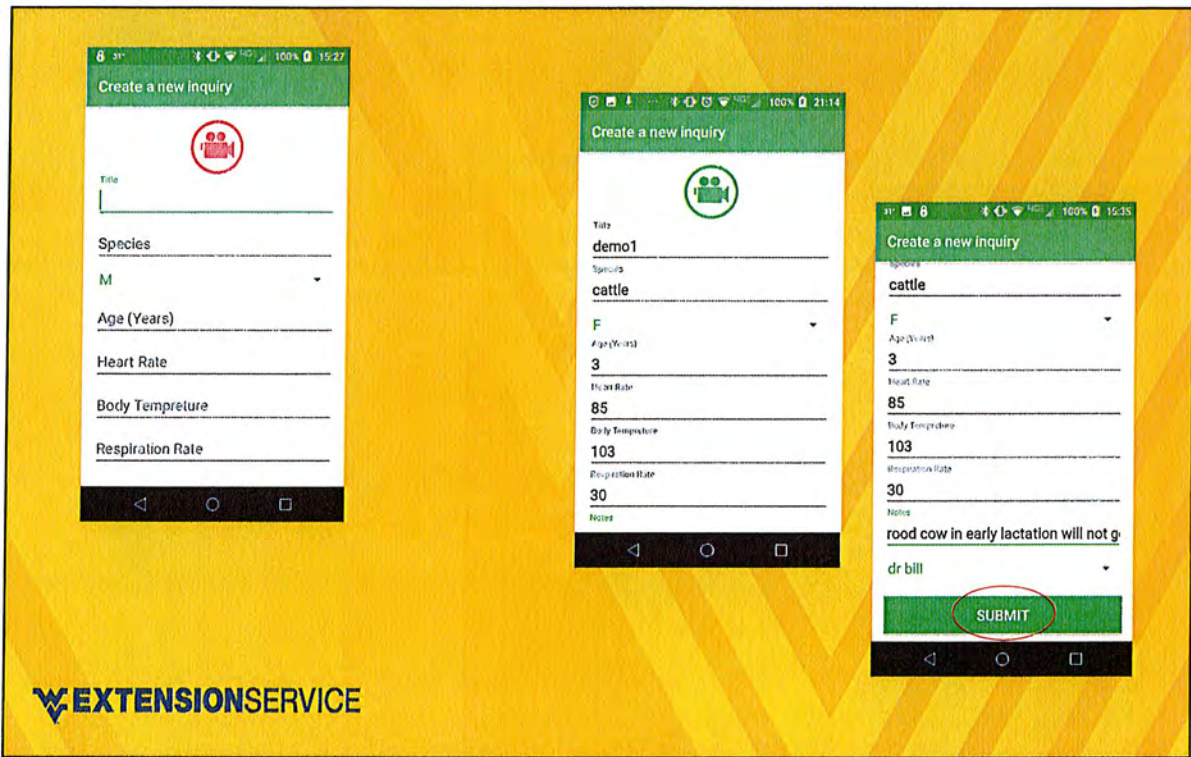


Current Version - October 2018

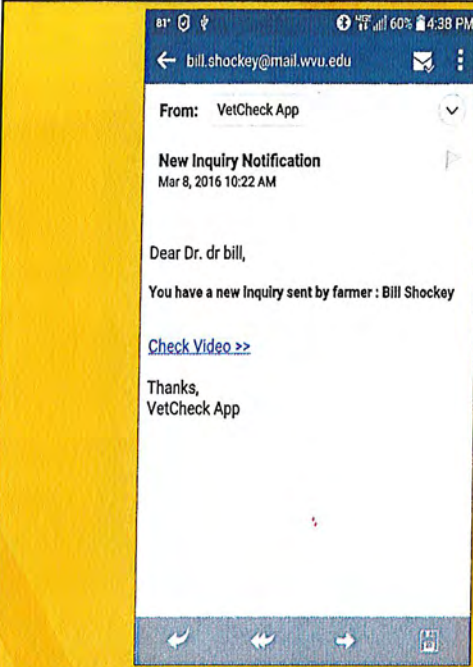




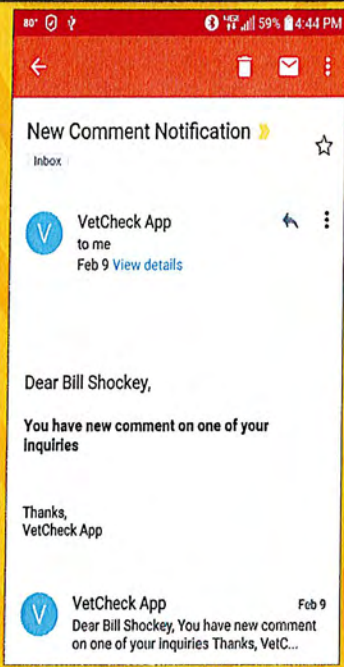
EXTENSIONSERVICE



EXTENSIONSERVICE

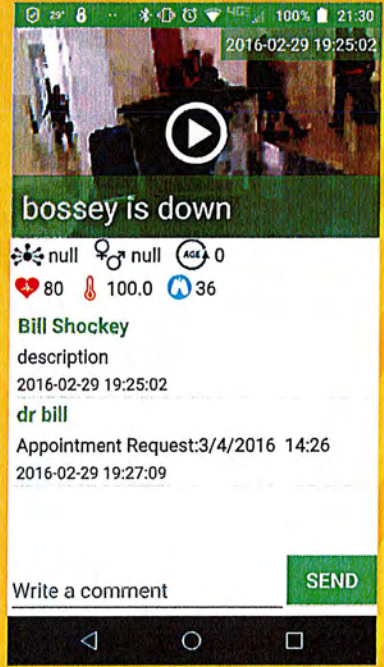


**Veterinarian
Receives email Alert 24/7**



**Farmer Receives email
Alert of Vet's Response**

**A complete record of the
Farmer/Veterinarian
interaction is recorded**





USER'S MANUAL

VetCheck Application

**West Virginia University –
Computer Vision Lab**

February, 2016

*Dr. Guodong Guo
Mohamad Al jazaery
Jianquan Wu*

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2/8/16	First Version

USER'S MANUAL

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2.0 GENERAL INFORMATION

General Description:

VetCheck is a system to connect the farmer with vets by mobile devices. Farmers can post videos showing the status of their sick animals. Vet can view the videos and reply on the inquiries.

Architecture of the system:

The system now is client/server application. Where all the information is stored in the server and the android client is connected with the server using Restfull API.

1. *Server:*

It's implemented using "LAMP" stack: Linux, PHP, Apache, Mysql.
PHP Framework: Phalcon

2. *Client:*

Android tablets and phones

User access mode:

1. *Admin:*

Manage the whole data of the system by logging in to control panel using any internet web browser.

2. *Vet:*

Should download the android application and register, in order to receive inquiries and reply on them.

3. *Farmer:*

Also should register using the android application. Then he can post new inquiries and have conversation with vets about his inquiry.

3.0 FARMER USER INTERFACE

Sign Up:

VetCheck

Full name
Your Full Name

Email
YourEmail@email.com - Use this when login

Phone
11111111

Address
Street, City, Country

Password
.....

farmer

SIGN UP

Already have account? Login

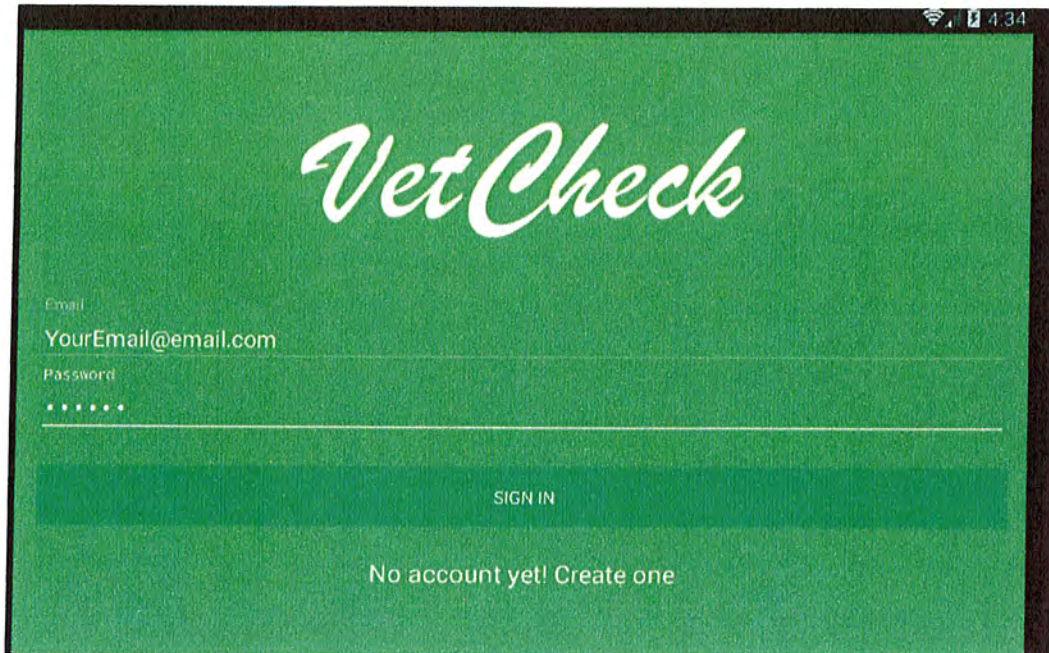
Past action:

Redirected from the sign in page.

Interface functions:

- 1- Filling Full name, Email, Address, Phone, Address, Password, Type as a farmer.
- 2- Signup/Register as farmer

Login:



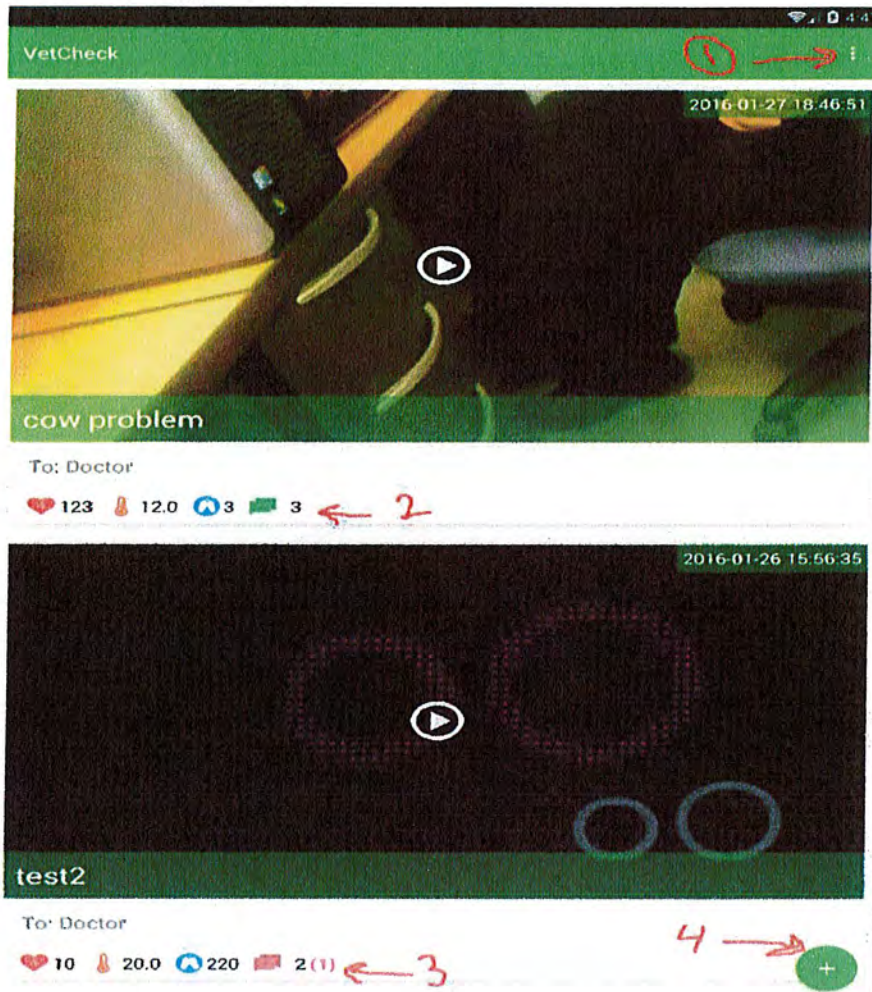
Past action:

- Open the application
- Return from sign up page
- Logout

Interface functions:

- Login to the system using the email and the password of the user
- Go to the sign up page by clicking on (No account yet! Create one)

List Past Inquiries:



Past action:

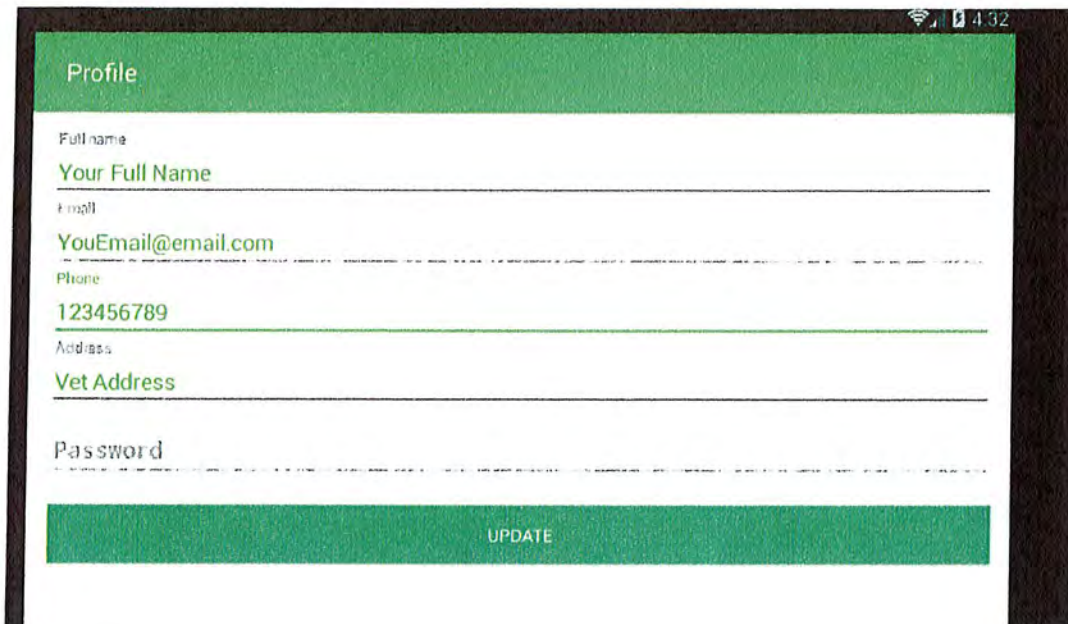
Login or open the application (if the farmer is already logged in)

Interface function:

1- Setting button:



- 2- Comment counts (green icon)
- 3- Unread comments count (red icon)
- 4- Add new video inquiry

Update Profile:

Profile

Full name
Your Full Name

Email
YouEmail@email.com

Phone
123456789

Address
Vet Address

Password

UPDATE

Past action:

Click settings button on the (list inquiries) interface then click Profile

Interface Functions:

- 1- Update the full name
- 2- Update Email address
- 3- Update the phone number
- 4- Update the address
- 5- Update the password

Submit Inquiry:

The screenshot shows a mobile application interface titled "Create a new inquiry". It features several input fields: "Title", "Heart Rate", "Body Temperature", "Respiration Rate", "Notes", and "Doctor". At the bottom, there is a green bar with a "SUBMIT" button. Red annotations are present: a circled "1" with an arrow pointing to a video camera icon above the Title field; a circled "2" with an arrow pointing to the Notes field; and a circled "3" with an arrow pointing to the SUBMIT button.

Past action:

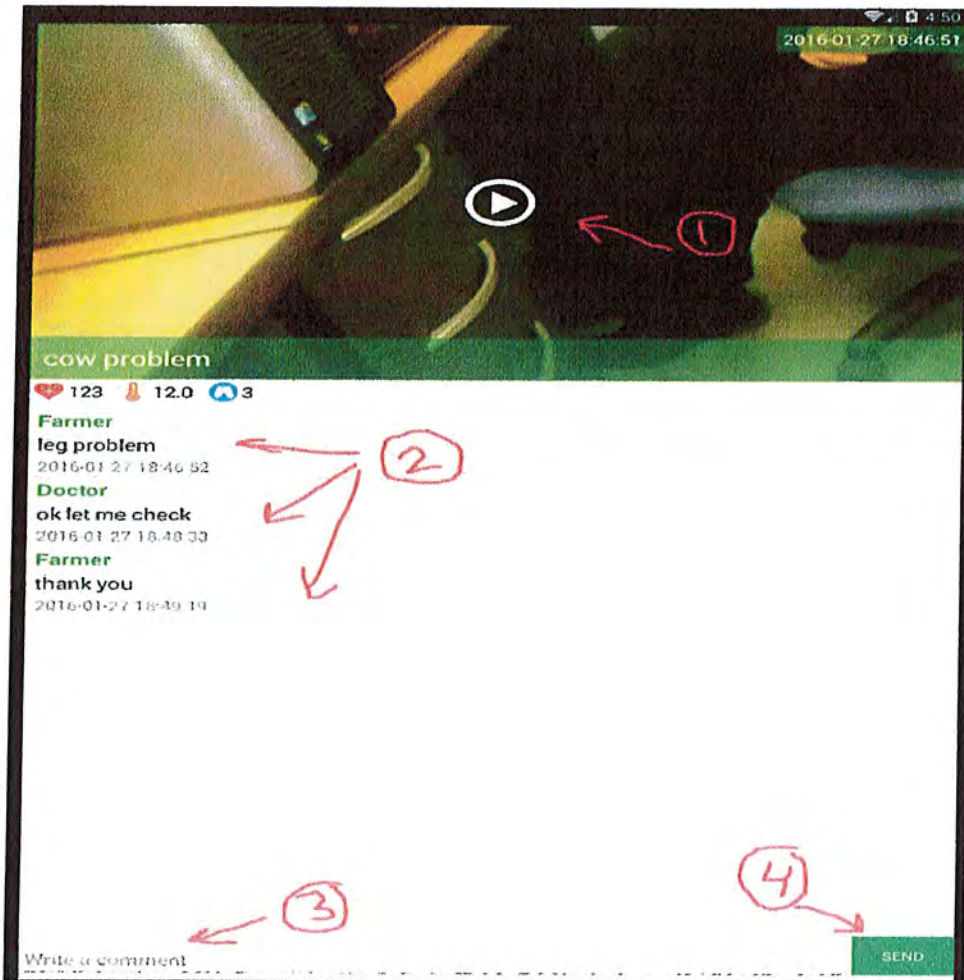
Click the add inquiry action button from the "List Inquiries" interface

Functions:

1- Record the video

2- Choose the doctor



View Inquiry details / add a comment on Inquiry:**Past Action:**

User clicked on one of his last inquiries to view.

Interface functions:

- 1- Play the video
- 2- View the past comments list
- 3- Write comment
- 4- Send (submit) comment

Email Notifications:

Farmer will receive an email notification if the vet reply on his inquiry or ask for appointment to see the animal.

4.0 VET USER INTERFACE

Sign Up:

The screenshot shows the VetCheck sign-up page. The background is green. At the top, the logo "VetCheck" is displayed in white. Below the logo, there are several input fields: "Full name" with the placeholder "You Full name", "Email" with the placeholder "YourEmail@email.com", "Phone" with the placeholder "009990099900", and "Address" with the placeholder "Street, city, country". Below these is a "Password" field with a masked input (dots). At the bottom left, there is a dropdown menu with "vet" selected. A red circle with the number "1" is drawn around the dropdown menu, with an arrow pointing to it. In the center, there is a "SIGN UP" button. A red circle with the number "2" is drawn around the button, with an arrow pointing to it. At the bottom, there is a link that says "Already have account? Login". A red circle with the number "3" is drawn around the link, with an arrow pointing to it. The top right corner of the screen shows a Wi-Fi icon, a battery icon, and the time "12:17".

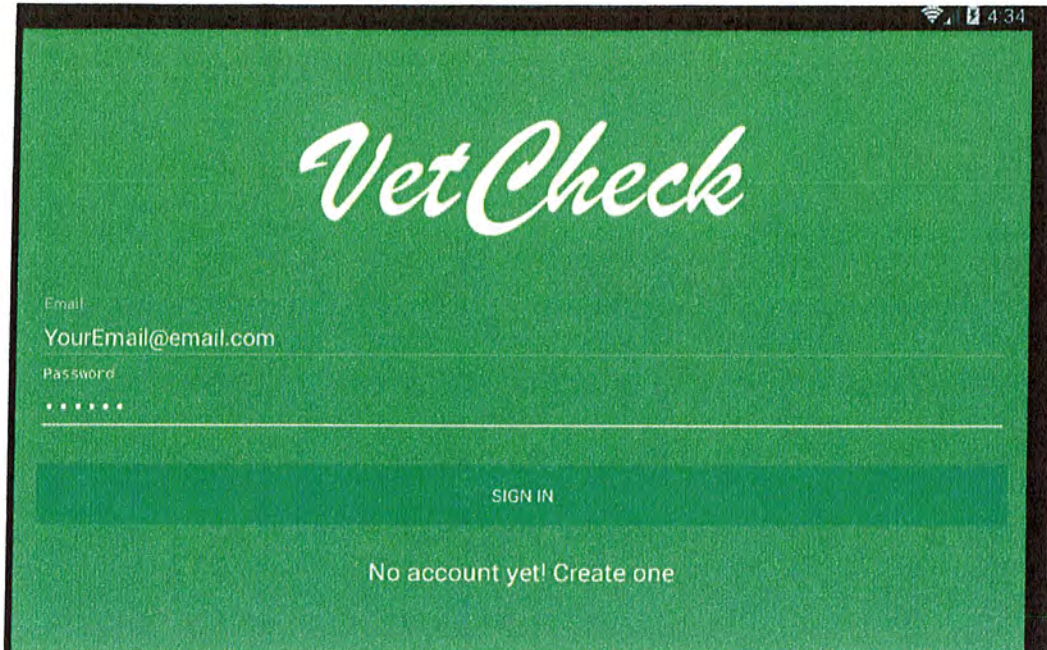
Past action:

Redirected from the sign in page.

Interface functions:

- 1- Filling Full name, Email, Address, Phone, Address, Password, and Type as a Vet.
- 2- Signup/Register as Vet
- 3- Or Cancel and go back to login page if already have account

Login:



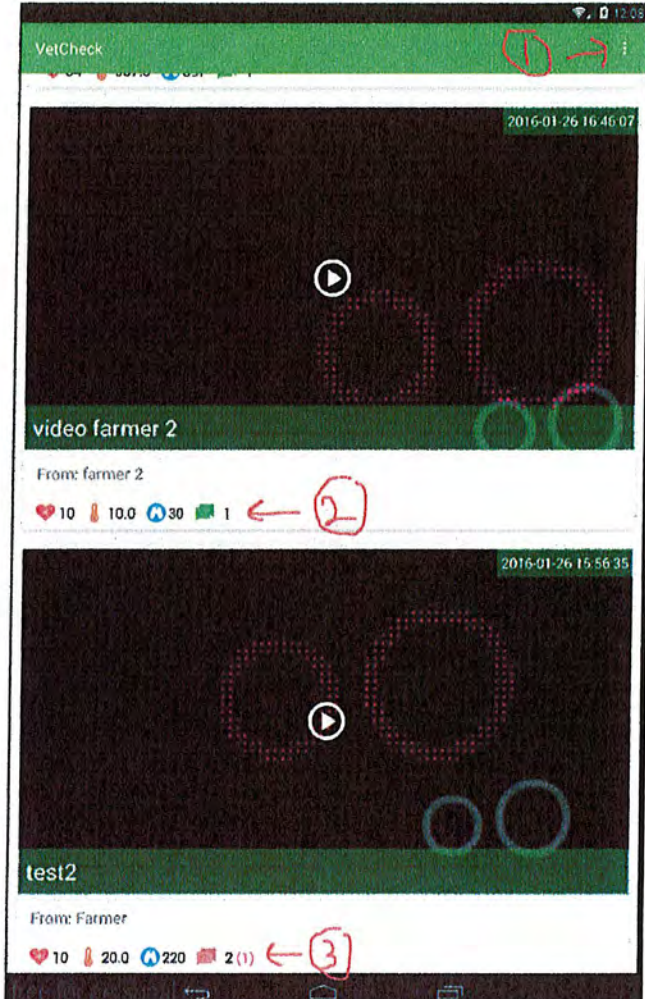
Past action:

Open the application and the vet is not already logged in
Redirected from sign up page

Interface functions:

- 1- Login to the system using the email and the password of the user
- 2- Go to the sign up page by clicking on (No account yet! Create one)

List Past Inquiries:



Past action:

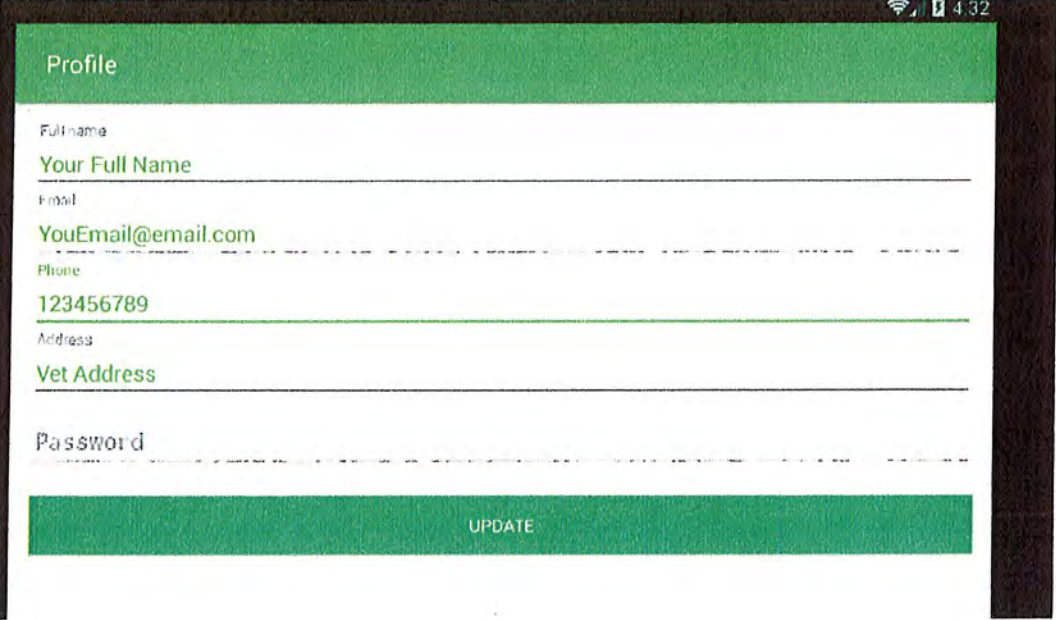
Login or open the application (if the vet is already logged in)

Interface function:

1- Setting button:



- 2- Comment count (green icon)
- 3- Unread comments count (red icon)

Update Profile:

Profile

Full name
Your Full Name

Email
YouEmail@email.com

Phone
123456789

Address
Vet Address

Password

UPDATE

Past action:

Click settings button on the (list inquiries) interface then click Profile

Interface Functions:

- 1- Update the full name
- 2- Update Email address
- 3- Update the phone number
- 4- Update the address
- 5- Update the password

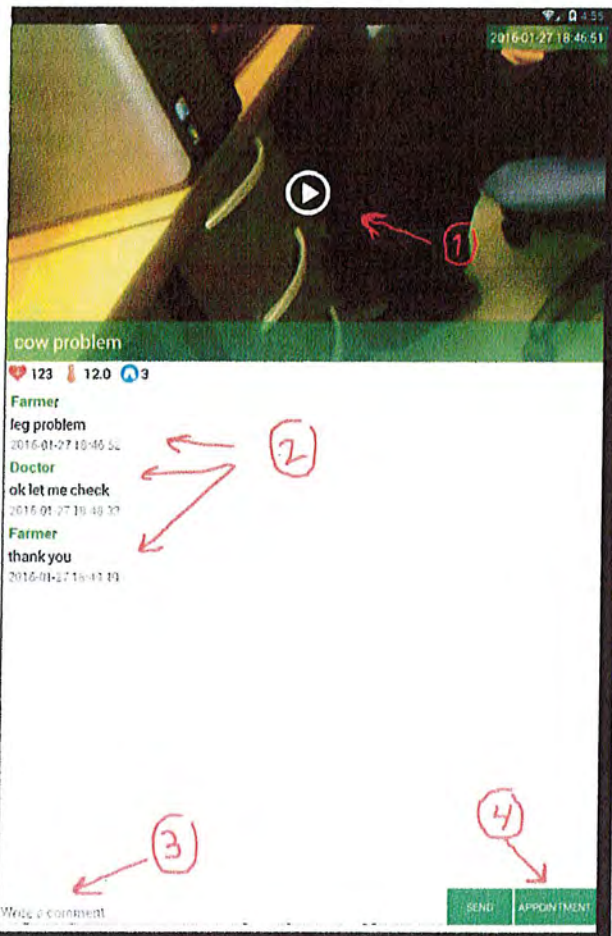
View Inquiry details / add a comment on Inquiry / make appointment:

Past Action:

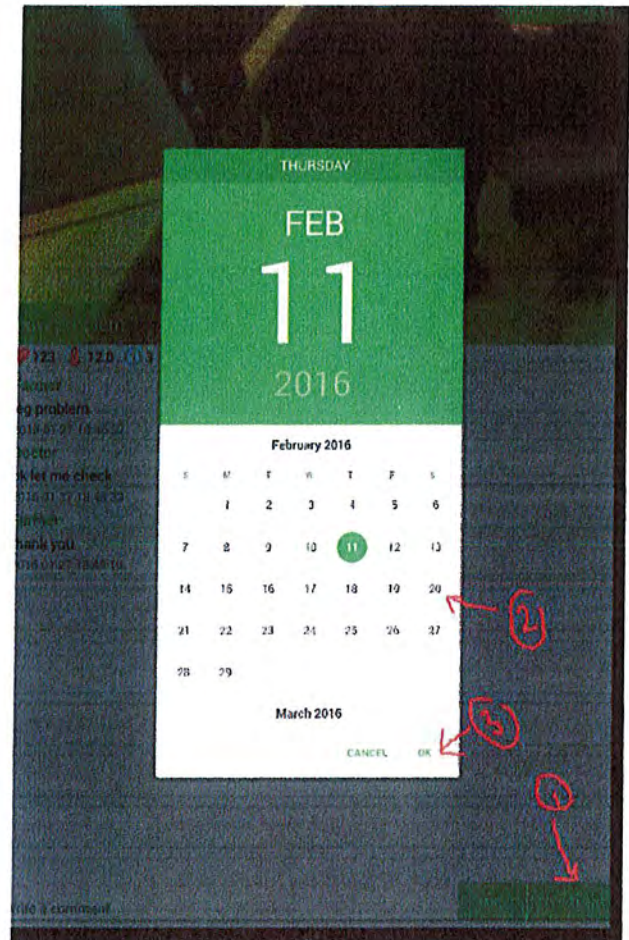
User clicked on one of his last inquiries to view.

Interface functions:

- 1- Play the video
- 2- View the past comments list



- 3- Writ comment and click send button
- 4- Make Appointment
 - a. Click appointment button
 - b. Choose date
 - c. Click OK



Email Notifications:

Vet will receive an email notification if the farmer submit a new video inquiry for him, or if the farmer add a comment on one of his inquiries.



Who Benefits from BQA?

Directions: Sort each benefit in the column of who it helps.








Producer	Employee	Consumer
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Benefits:

- Positive Public Perception of the Beef Industry
- Animal Welfare
- Better Market Access
- Safe Work Place
- Safe Consistent Product
- Ensure Production of a Defect-free Product
- Good Business Management

HACCP Principles of BQA

Directions: Take notes about each principle that corresponds with each icon.

Recordkeeping Basics

Directions: Take notes on the different components of recordkeeping.



Health



Chemical



Time



Feed



Pesticide





Components of Biosecurity

Directions: Take notes on the five components of biosecurity.

	Component	Notes on Component
A		
R		
I		
T		
S		

Euthanasia Tools

Directions: Capture information on each tool used for euthanasia purposes.

Euthanasia Location

Directions: Mark the optimal point of entry for euthanasia on the images.








Cattle Handling

Directions: Fill-in-the blanks for each statement on cattle handling.

1. Cattle are ____ animals and they are likely to become highly agitated and stressed when they are _____ from their herd mates.
2. Understanding _____ _____ can reduce stress and help prevent accidents.
3. Cattle's eyes are on the _____ of their heads; therefore, cattle have approximately _____ vision, leaving a blind spot directly _____ them.




Handling Aids

Directions: Take notes on each cattle handling aid.

Fitness for Transport

Directions: Take notes on the considerations to take when deciding if animals are fit for transport.

		
Fit for Transport	Transport with Special Provisions	Do Not Transport

Animal Health Short Course

Agenda Session II March 14 (March 21, snow date)

- | | |
|-------------|---|
| 6:00 - 6:05 | Announcements (Shockey) |
| 6:05 - 7:00 | Animal Ethics, Body Condition Scoring & Animal Demeanor (Scott) |
| 7:00 - 7:15 | Break |
| 7:15 - 8:00 | Record Keeping (McConnell) |
| 8:00 - 9:00 | BQA - Topic to be determined (Loyd) |

Animal Ethics, Body Condition Scoring, Animal Demeanor

Objectives:

Discuss Animal Welfare

Understand Body Condition Scoring of Animals

Discuss Basic Animal Demeanor

Concepts in Animal Ethics

Animal Rights vs Animal Welfare

Animal Rights vs Animal Welfare		
	The Rights Position	The Welfare Position
Morality	Using animals is morally wrong.	Using animals is morally right.
Benefits	We should not use animals to benefit ourselves.	We can use animals to benefit ourselves.
Interests	We should not invariably overrule the interests of animals with human interests.	Our interests are always more important than the interests of animals.
Pain	We should not inflict pain or death on animals.	We should not cause animals 'unnecessary' pain or death.
Humane Treatment	We should always treat animals humanely and eliminate the human made causes of animal suffering.	We should treat animals as humanely as convenient to us.

Animal well-being is on a continuum

The middle is a range of
healthy or functional behavior

This side is unhealthy
or dysfunctional

This side is unhealthy
or dysfunctional



The Five Freedoms of Animal Welfare: Brambell (UK) Report on Livestock Husbandry

- Freedom from hunger or thirst by ready access to fresh water and a diet to maintain full health and vigor.
- Freedom from discomfort by providing an appropriate environment including shelter and a comfortable resting area.
- Freedom from pain, injury or disease by prevention or rapid diagnosis and treatment.
- Freedom to express (most) normal behavior by providing sufficient space, proper facilities and company of the animal's own kind.
- Freedom from fear and distress by ensuring conditions and treatment which avoid mental suffering.

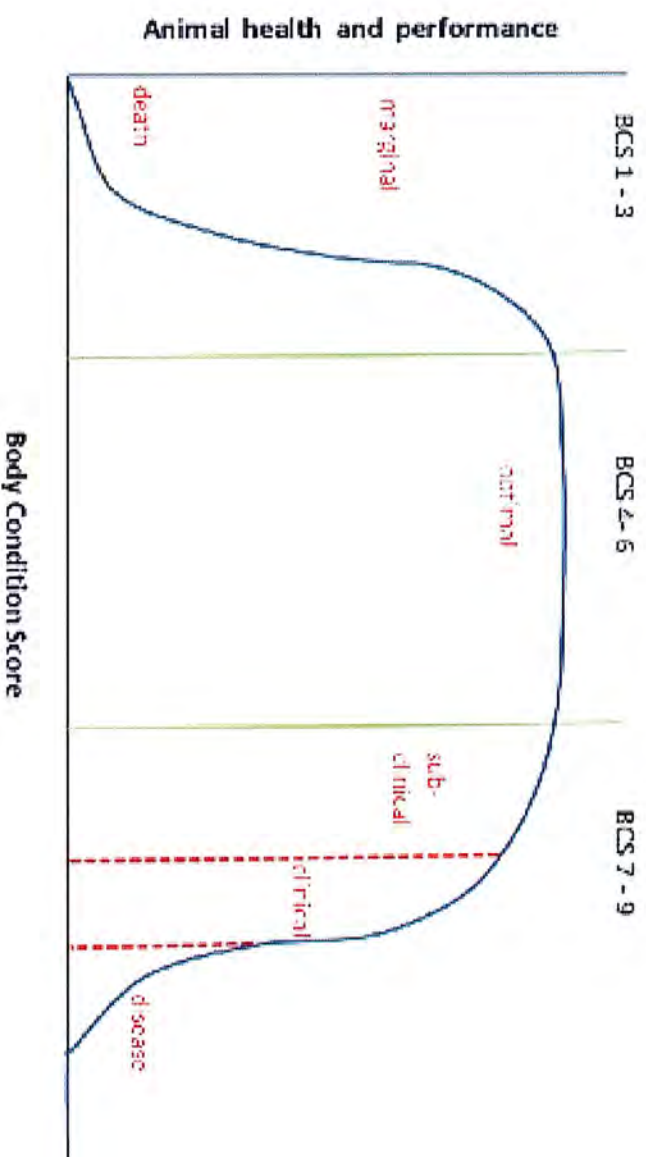
1. Freedom from Hunger or Thirst

Body Condition Scoring

A practical, non-invasive tool to assess nutritional status

Scale to assess relative nutritional status:
Undesirable-----Desirable-----Undesirable










Impacts of Body Condition Score (BCS) on overall health and performance



What is the Ideal Body Condition for Animals?










Nestlé PURINA

BODY CONDITION SYSTEM

<p>1 Ribs, lumbar vertebrae, pelvic bones and all body prominences evident from a distance. No discernible body fat. Obvious loss of muscle mass.</p> <p>2 Ribs, lumbar vertebrae and pelvic bones easily visible. No palpable fat. Some evidence of other body prominence. Minimal loss of muscle mass.</p> <p>3 Ribs easily palpated and may be visible with no palpable fat. Tops of lumbar vertebrae visible. Pelvic bones becoming prominent. Obvious waist and abdominal tuck.</p> <p>4 Ribs easily palpable, with minimal fat covering. Waist easily noted, viewed from above. Abdominal tuck evident.</p> <p>5 Ribs palpable without excess fat covering. Waist observed behind ribs when viewed from above. Abdomen tucked up when viewed from side.</p> <p>6 Ribs palpable with slight excess fat covering. Waist is discernible viewed from above but is not prominent. Abdominal tuck apparent.</p> <p>7 Ribs palpable with difficulty, heavy fat cover. Noticeable fat deposits over lumbar area and base of tail. Waist absent or barely visible. Abdominal tuck may be present.</p> <p>8 Ribs not palpable under very heavy fat cover, or palpable only with significant pressure. Heavy fat deposits over lumbar area and base of tail. Waist absent. No abdominal tuck. Obvious abdominal distention may be present.</p> <p>9 Massive fat deposits over thorax, spine and base of tail. Waist and abdominal tuck absent. Fat deposits on neck and limbs. Obvious abdominal distention.</p>	 <p>1</p>  <p>2</p>  <p>3</p>  <p>4</p>  <p>5</p>  <p>6</p>  <p>7</p>  <p>8</p>  <p>9</p>
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The BODY CONDITION SYSTEM was developed by the Health Nutrition Pet Care Center and has been developed by Nestlé Purina Animal Health. For more information, contact Nestlé Purina Animal Health, P.O. Box 130, Merion, KY 40450, or visit us online at www.purina.com. ©2011 Purina Animal Health. All rights reserved.

BODY CONDITION SCORE

<p>1 Ribs, spine and pelvic bones easily visible on unsharpened ears. Very narrow waist. Small amount of muscle. No palpable fat on ribs. Severe abdominal tuck.</p> <p>2 Ribs easily visible on unsharpened ears. Very narrow waist. Loss of muscle mass. No palpable fat on the ribs cage. Very pronounced abdominal tuck.</p> <p>3 Ribs visible on unsharpened ears. Obvious waist. Very small amount of muscle. Marked abdominal tuck.</p>	<p>TOO THIN</p>  <p>1</p>  <p>2</p>  <p>3</p>	<p>4 Ribs not visible but are easily palpable. Obvious waist. Minimal amount of abdominal fat.</p> <p>5 Well proportioned. Ribs are easily palpable but are easily palpable. Obvious waist. Small amount of abdominal fat. Slight abdominal tuck.</p> <p>6 Ribs not visible but are easily palpable. Waist not clearly defined. Very slight abdominal tuck.</p>	<p>IDEAL</p>  <p>4</p>  <p>5</p>  <p>6</p>	<p>7 Ribs difficult to palpate under the fat. Waist barely visible. No abdominal tuck. Rounding of abdomen with moderate abdominal fat.</p> <p>8 Ribs not palpable under the fat. Waist not visible. Slight abdominal distention.</p> <p>9 Ribs not palpable under a thick layer of fat. Waist absent. Obvious abdominal distention. Extensive abdominal fat deposits.</p>	<p>TOO HEAVY</p>  <p>7</p>  <p>8</p>  <p>9</p>
---	--	--	---	---	---

ROYAL CANIN

Body Condition Score Chart

Areas of emphasis for body condition scoring: thickening of the neck, fat covering the withers, fat deposits along backbone, fat deposits on flanks, fat deposits on inner thighs, fat deposits around tailhead, fat deposits behind shoulders, fat covering ribs, shoulder blades into neck



1 Poor

Animal extremely emaciated; spine, ribs, tailhead, points of hip and buttock projecting prominently; bone structure of withers, shoulders, and neck easily noticeable; no fatty tissue can be felt.



2 Very Thin

Animal emaciated; slight fat covering over base of spine; ribs, tailhead, points of hip and buttock prominent; withers, shoulders, and neck structure faintly discernible.



3 Thin

Fat building about halfway on spine; slight fat cover over ribs; spine and ribs easily discernible; tailhead prominent, but individual vertebrae cannot be identified visually; points of hip appear rounded but easily discernible; points of buttock not distinguishable; withers, shoulders, and neck accentuated.



4 Moderately Thin

Slight ridge along back; faint outline of ribs discernable; tailhead prominence depends on conformation; fat can be felt around it; points of hip not discernable; withers, shoulders, and neck not obviously thin.



5 Moderate

Back is flat (no crease or ridge); ribs not visually distinguishable but easily felt; fat around tailhead beginning to feel spongy; withers appear rounded over spine; shoulders and neck blend smoothly into body.



6 Moderately Fleshy

May have slight crease down back; fat over ribs fleshy/spongy; fat around tailhead soft; fat beginning to be deposited along sides of withers, behind shoulders, and along sides of neck.



7 Fleshy

May have crease down back; individual ribs can be felt, but noticeable filling between ribs with fat; fat around tailhead soft; fat deposited along withers, behind shoulders, and along neck.



8 Fat

Crease down back; difficult to feel ribs; fat around tailhead very soft; area along withers filled with fat; area behind shoulders filled with fat; noticeable thickening of neck; fat deposited along inner thighs.



9 Extremely Fat

Obvious crease down back; patchy fat appearing.

USE OF CONDITION SCORING TO MAINTAIN REPRODUCTION IN BEEF COWS

- Condition scores for beef cows Empty body fat, %



– Condition score 1 – Emaciated	0	
– Condition score 2 – Very thin	4	
– Condition score 3 – Thin	8	
– Condition score 4 – Borderline	12	
– Condition score 5 – Moderate	16	
– Condition score 6 – Good	20	
– Condition score 7 – Very good	24	
– Condition score 8 – Fat	28	
– Condition score 9 – Very fat	32	

Table 8. Visual and palpation methods for determining body condition in cattle

- 1.** Bone structure of shoulder, ribs, back, hooks and pins is sharp to the touch and easily visible. Little evidence of fat deposits or muscling.
- 2.** Little evidence of fat deposition but some muscling in the hindquarters. The spinous processes (vertebrae) feel sharp to the touch and are easily seen with space between them.
- 3.** Beginning of fat cover over the loin, back, and foreribs. The backbone is still highly visible. Processes of the spine can be identified individually by touch and may still be visible. Spaces between are less pronounced.
- 4.** Foreribs are not noticeable but the 12th and 13th ribs are still noticeable to the eye, particularly cattle with a big spring of rib and width between ribs. The transverse spinous processes can be identified only by palpation (with slight pressure) and feel rounded rather than sharp. Full, but straight muscling in the hindquarters.

- 5.** The 12th and 13th ribs are not visible to the eye unless the animal has been shrunk. The transverse spinous processes can only be felt with firm pressure and feel rounded but are not noticeable to the eye. Spaces between the processes are not visible and are only distinguishable with firm pressure. Areas on each side of the tailhead are well filled but not mounded.
- 6.** Ribs are fully covered and are not noticeable to the eye. Hindquarters are plump and full. Noticeable sponginess over the foreribs and on each side of the tail head. Firm pressure is required to feel the transverse processes.
- 7.** Ends of the spinous processes can only be felt with firm pressure. Spaces between processes can barely be distinguished. Abundant fat cover on either side of the tail head with evident patchiness.
- 8.** Animal takes on a smooth, blocky appearance. Bone structure disappears from sight. Fat cover is thick and spongy and patchiness is likely.
- 9.** Bone structure is not seen or easily felt. The tailhead is buried in fat. The animal's mobility may actually be impaired by excessive fat.

Adapted from Pruitt and Momont, South Dakota State University, 1988.

BSC in Dairy Cattle



Score 1



Score 2



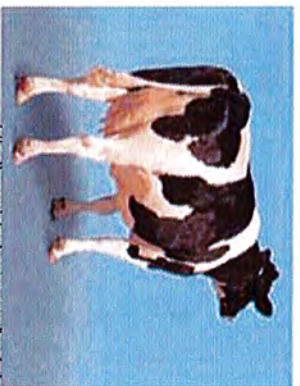
Score 3



Score 4



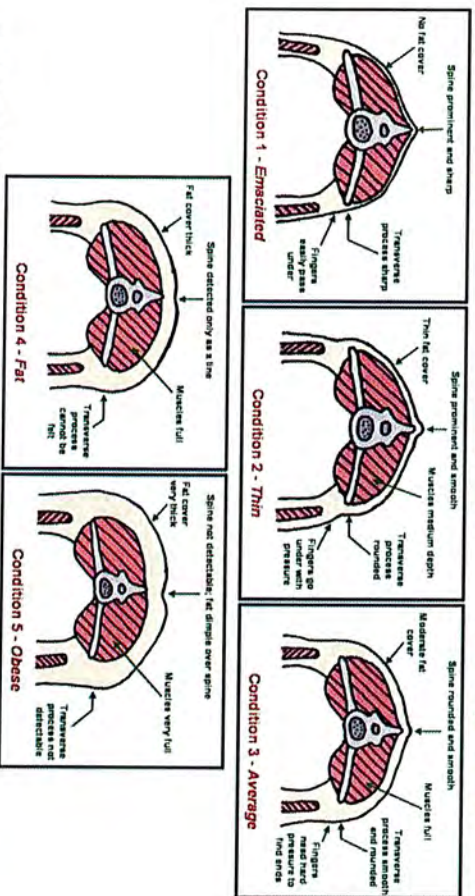
Score 5



<http://www.intechopen.com/books/artificial-insemination-in-farm-animals/particularities-of-bovine-artificial-insemination>

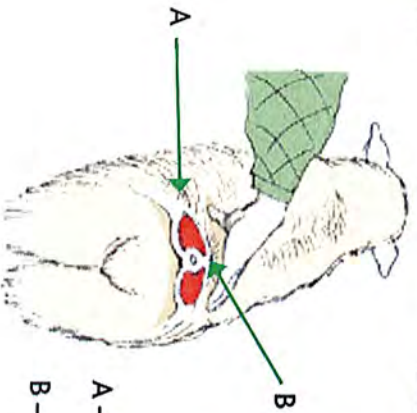
<https://www.youtube.com/watch?v=gZVwm5kxz8I>

Body Condition Scores – Sheep/Goats



Adapted from "Body Condition Scoring of Sheep" by J.M. Thompson and K. Meyer (Oregon State University)

UK UNIVERSITY OF KENTUCKY
College of Agriculture
Department of Animal Science



- A – Transverse processes
- B – Spinous processes

Ewe's Target Body Condition Scores per Phase	Target Score
Stage of Production	
Dry Ewe	1.5 to 2.0
Breeding	2.5 to 3.0
Early Gestation	2.0 to 2.5
Late Gestation	2.5 to 3.0
Early Lactation	3.0 to 3.5
Late Lactation, Weaning	2.0 to 2.5
(add .5 to late gestation and early lactation if ewe is expecting twins)	



Body condition: Access to food and water



2. Freedom from discomfort by providing an appropriate environment including shelter and a comfortable resting area.

Comfort

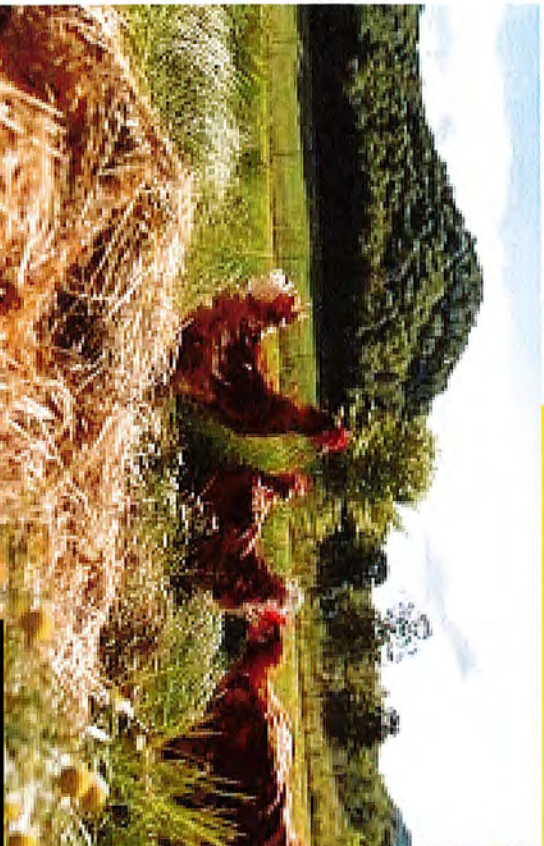
Dry

Clean

Air Movement

Protection

Public Perception of Comfort



Shelter

- Comfort
- Dry
- Clean
- Air Movement
- Protection



We Promote
the care of animals



3. Freedom from pain, injury or disease

Acceptable Management Practices Can Inflict Pain

Castration

Dehorning or disbudding

Tail Docking

Ear tagging or notching

Branding

Tattooing

The AVMA position statement on "Tail docking, identification, and castration of swine"

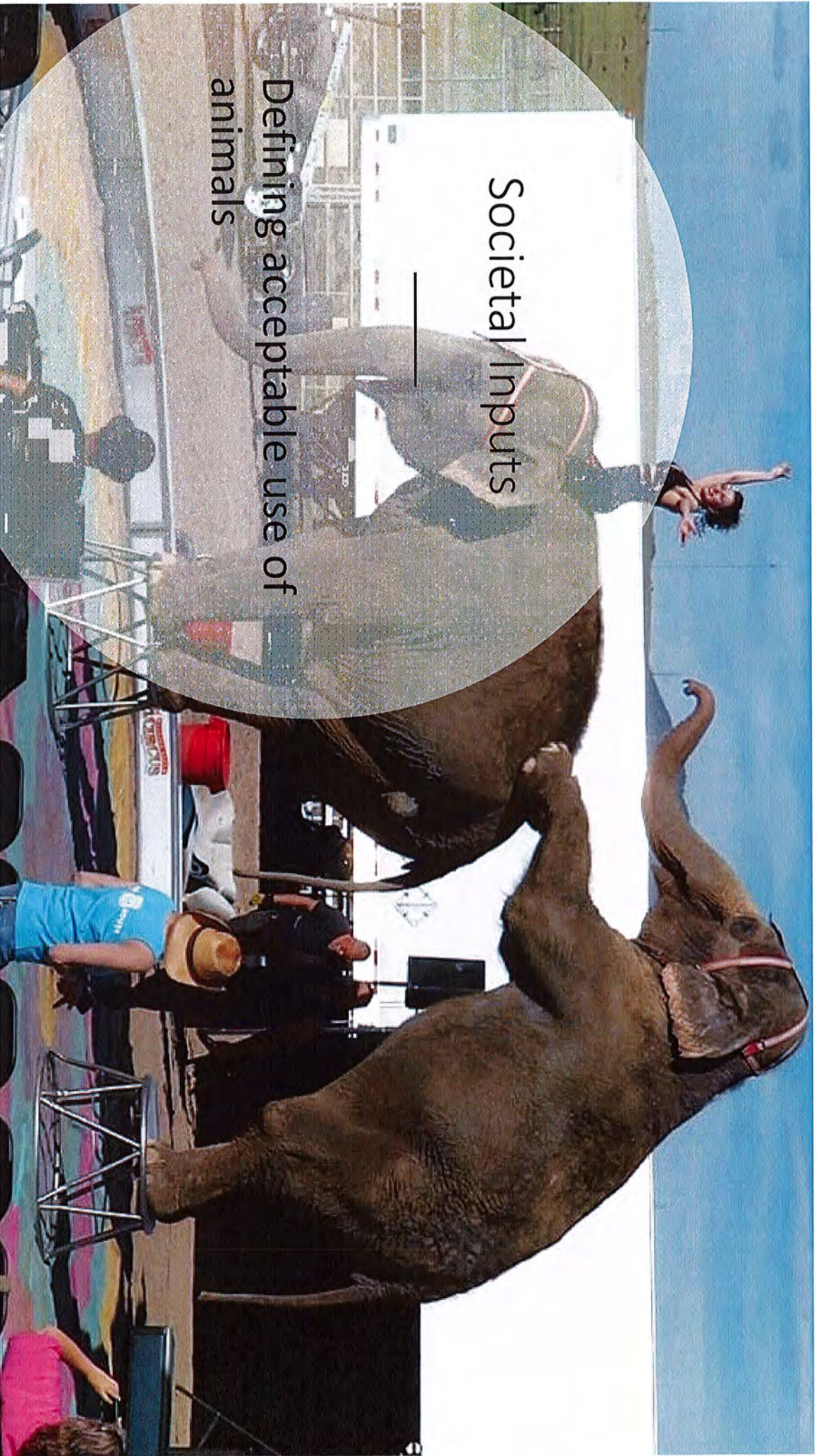
- Certain procedures may be necessary for proper care and management of swine. Good hygiene and trained personnel are required.
- **Tail docking** is a management practice performed to prevent tail biting that results from aggression between pigs. Tail docking should be performed within the first week of the pig's life.
- **Ear notching** is a practice used for identification. It should be performed within the first week of life.
- **Castration** of swine can help control aggression. Castration should be performed at least 5 days prior to weaning to allow adequate healing. When swine are castrated after they are 28 days old, anesthesia and/or analgesia should be used, and these castrations should be performed by a veterinarian.

Tail Docking of Ruminants: The Position Statement of the American Veterinary Medical Association

- **Cattle:** "The AVMA opposes routine tail docking of cattle," according to the policy. "Current scientific literature indicates that routine tail docking provides no benefit to the animal, and that tail docking can lead to distress during fly seasons."
- The AVMA policy now states, "Tails may be amputated on an individual basis when medically necessary by or under the guidance of a licensed veterinarian."
- **Sheep:** <https://www.youtube.com/watch?v=4k07s8Br7Pk>

4.

Freedom to express normal behaviors



Societal Inputs

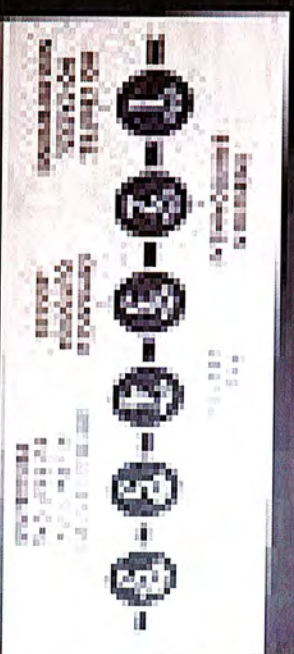
Defining acceptable use of animals

Societal inputs



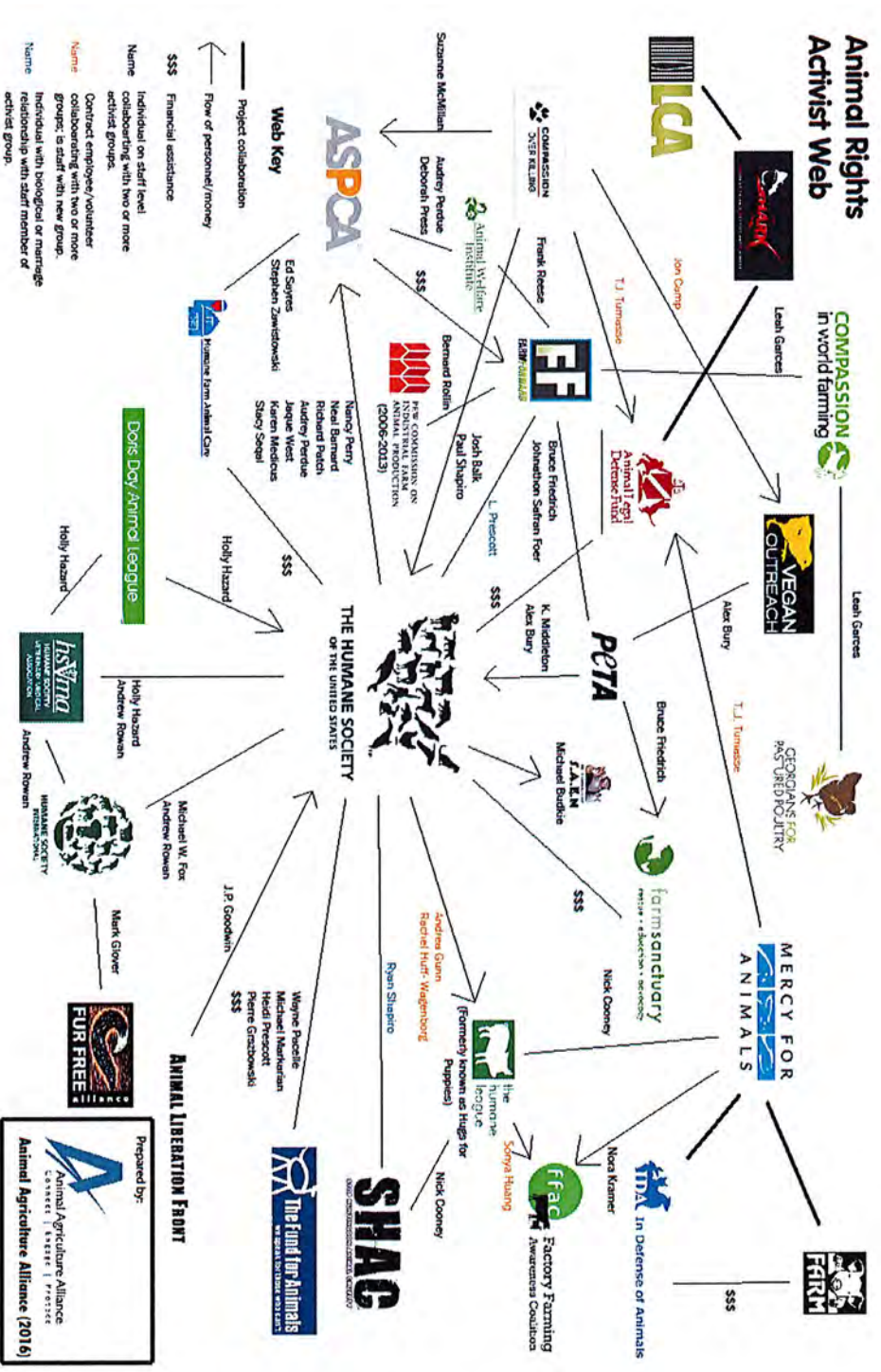
WORKING TOGETHER
TO RAISE THE
QUALITY OF LIFE
FOR FARM ANIMALS.

A tiered program that supports and recognizes farmers and ranchers for their efforts on the wellbeing of animals.



5 Step Animal Welfare ratings.

How does society have input?

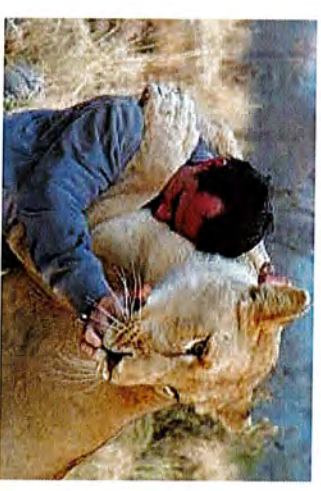
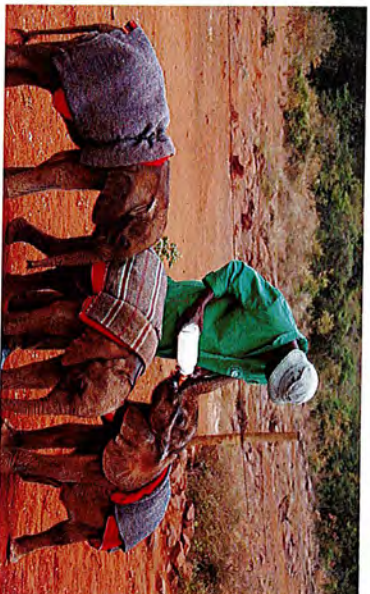


Prepared by:
Animal Agriculture Alliance
 Covered | 1999 | 2016
Animal Agriculture Alliance (2016)

5. Freedom from fear and distress

Animal – Human Bond

Trust -> Responsibility -> Dependence



Animal Demeanor



What is this dog trying to tell you?

I'm feeling stressed

I'm nervous

I'm unsure

I'm frightened

I'm hungry



Playtime

I'm happy

I'm thirsty

I'm angry

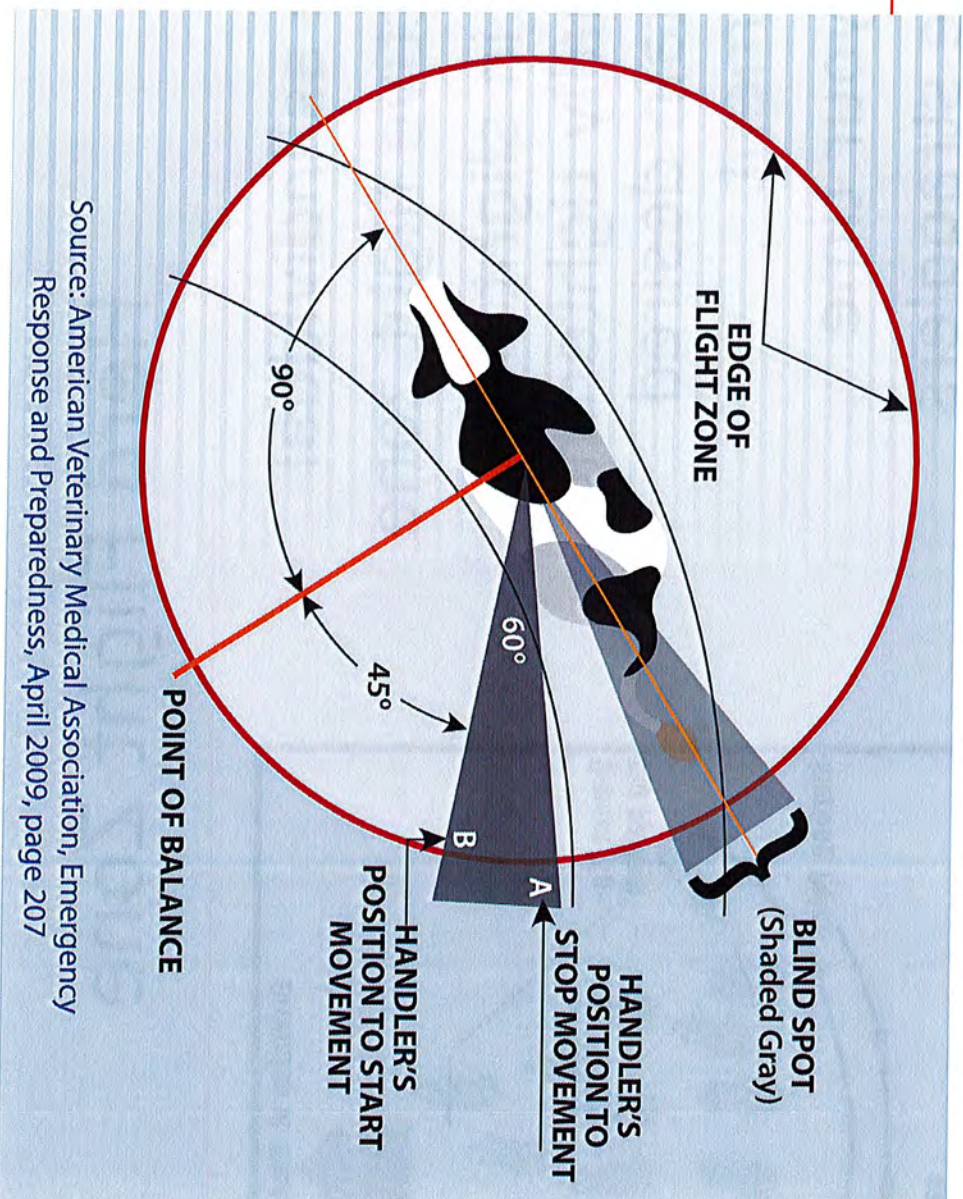
I'm sleepy

#beddogsmart

www.dogs-trust.org.uk



Moving Animals: Flight Zone

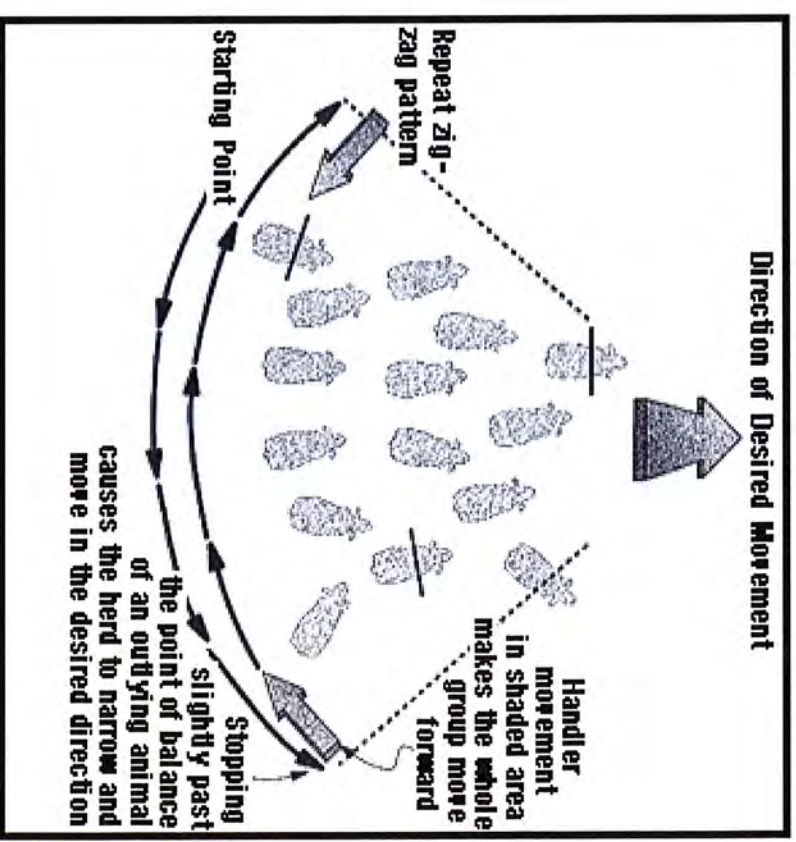


Source: American Veterinary Medical Association, Emergency Response and Preparedness, April 2009, page 207



Herd Flight Zone

- Same as individual
- Collective flight zone
- Move in slight arc, gradually tightening to obtain desired movement
- Take your time
- Ignore stragglers





Safety

- **Avoid Injuries from Cattle**
 - Kicks
 - Cows kick with back feet
 - Crowding
 - Crushing
 - Can inflict injuries with head
 - Don't bite
 - Will run over you if desperate



Just in Time Training

<http://www.cfsp.h.iastate.edu/Emergency-Response/just-in-time-training.php>

Recognize Dr. Robert Dailey for his assistant and help in preparing this presentation.

Take Home Messages

Animal Welfare

- Respect
- Responsibility
- Threats to animal

Body Condition Scoring

- Not too fat and not too thin (use common sense)
 - Consistent scoring most important
- Body condition can be changed through feeding

Animal Demeanor

- Recognize context (situation)
- Human behavior is important
- Security and safety of animal and human

Thank-you for your attention.

Herd Health Records

Directions: Fill out the nine components of a health treatment record and take notes on each component.

Component									
Notes on Component									

Herd Health Plan

Directions: Fill in the headings for each component of a herd health plan. Take notes in the margins about each component.

Herd Health Plan

- Internal Parasites
- External Parasites
 - Flies
 - Lice
 - Grubs
- Disease Complexes

- Bovine Respiratory Disease Complex (BRDC)
 - Clostridial Disease (Blackleg)
 - Bovine Respiratory Syncytial Virus (BRSV)
 - Bovine Viral Diarrhea (BVD)
 - Haemophilus Somnus
 - Infectious Bovine Rhinotracheitis (IBR)
 - Parainfluenza Type 3 (PI3)
 - Pasteurella Haemolytica and Pasteurella Multocida

- IBR
- BVD
- PI3
- BRSV
- Leptospirosis (5-way)
- Vibriosis

Coccidiosis Treatment & Prevention:

- Bovatec (active ingredient: lasalocid)
- Rumensin (active ingredient: monensin)
- Cordil (active ingredient: amprolium)
- Decox (active ingredient: decoquinate)

Scours Treatment:

- Chlorotetracycline
- Oxytetracycline
- Neomycin sulfate

Shipping Fever Control Treatment:

- Chlorotetracycline
- Chlorotetracycline and sulfamethazine (common name: Aureo 5 700 or AS 700) - withdrawal applies

1

This is a sample vaccination protocol for calves. Work with your herd veterinarian to determine what is appropriate in your area and to develop a plan for cows, heifers, and bulls.

Vaccine	Recommendation	Time Frame
Blackleg 7-Way	Recommended	Prewearing
IBR-BVD-PI3	Recommended	Prewearing
Leptospirosis	Recommended	Prewearing
Brucellosis	Recommended	Heifers (4 - 12 months)
BRSV	Optional	As needed
Pasteurella	Optional	Prewearing
Haemophilus somnus	Optional	Prewearing
Pinkeye	Optional	As needed

- Follow label instructions for all medications
- Always give injections in front of the shoulder
- Never exceed 10cc per injection site
- Identified treated animals to monitor withdrawal times
- Keep accurate records of all treatments

- Contact your veterinarian for castration and dehorning procedures for animals over 90 days old
- Observe BCS on cows in preparation for rebreeding
- Breed yearling heifers beginning 30 days before cows.

2

Nutrition and Herd Health

Directions: Take notes on each item that cattle need to be healthy.



Protein



Water



Minerals












Energy



Vitamins

Best Management Practices

Directions: Take notes on each best management practice for administering health products.



Marketing Cattle
Cow/Calf

Recordkeeping

Keep the following health records for each each animal.

Age	Structural Soundness	Mouth, eyes, udder issues	Treatment Records	Withdrawal Period	Disposition	Pregnancy Status

Keep/Cull

Directions: Take notes on which characteristics of cattle fall under the decision to either keep or cull the animal.

Keep	Cull



Animal Health Short Course

Agenda Session III - Hands On April 9 (April 16, Snow date)

- | | |
|-------------|--|
| 6:00 - 7:00 | Physical Examinations and Measurements
(Harvey, Walker) |
| 7:00 - 7:30 | Vaccination Protocols (Shafer, Harvey, Walker) |
| 7:30 - 8:00 | Break/Movement to Head Chute |
| 8:00 - 9:00 | Hands-on Vaccination Demonstration (Shafer,
Harvey) |

WV Beef Quality Assurance Comprehensive Herd Health Program

K. Shaffer, WVU Extension Specialist
D. Matlick, WVU Extension Veterinarian

Pre-breeding:

Cows/Heifers/Bulls – Post-calving but 30-60 days prior to breeding

1. IBR, PI3, BVD, BRSV – Modified live (Use Fetal Protection (FP) Products)
2. Lepto 5 and/or L. hardjo bovis—(*Vibrio Optional*)
3. 7-way Clostridial (Yearling Replacement Heifers)
4. Pinkeye (Optional)
5. Deworm yearling heifers—Cows/Bulls optional depending upon body condition

Calves

1. IBR, PI3, BVD, BRSV - Modified live (BVD optional in spring)
(Three intra nasals, Zoetis Inforce 3 or TSV-2 and Schering –Plough Nasalgen IP, are acceptable)
2. 7-way Clostridial
3. Pasteurella multocida and Mannheimia haemolytica (Optional)
4. Pinkeye (Optional)

Pre-vaccination/Weaning:

Calves – Three to four weeks prior to weaning

1. IBR, PI3, BVD, BRSV - Modified live
2. Lepto 5 and/or L. hardjo bovis ***
3. 7-way Clostridial
4. Pasteurella (Pasteurella multocida and/or Mannheimia haemolytica)
5. Deworm (White wormers are working best)

Calves – Booster at Weaning

1. IBR, PI3, BVD, BRSV - Modified live
2. Lepto 5 and/or L. hardjo bovis ***
3. 7- way Clostridial
4. Deworm (White wormers are working best)
5. All other products used at pre-vaccination that label requires booster

*** Pregnancy protection vaccines are only necessary for replacement heifers and bulls.

*** *Vibrio* is optional for pregnancy protection; however, if using vaccines containing *Vibrio* and Lepto 5, they must be administered separately from Pasteurella vaccines to minimize the risk of endotoxemia.

*** All vaccinations (boosters) must have been administered at least 30 days prior to shipment.

Preg-Check:

1. *Vibrio*, Lepto 5 and/or L. hardjo bovis (Optional)
2. Deworm thin cows and heifers

Pre-Calving:

1. Rotavirus, Coronavirus, Clostridium perfringens Type C, K99 E. coli. (Optional)
 - a. Cows—One month prior to calving
 - b. Bred Heifers—Two months prior to calving w/ booster one month prior to calving
2. De-lice w/ non-generic pour-on

WV Beef Quality Assurance Comprehensive Herd Health Program

Vaccination Protocol—Boehringer Ingelheim

Pre-breeding:

Cows/Bulls (Post-calving but 30-60 days prior to breeding)

1. Express FP10
2. Ocu-guard MB-1
3. Deworm first calvers w/ Synanthic—Older Cows not necessary

Yearling Replacement Heifers (30-60 days prior to breeding)

1. Express FP10
2. Alpha 7/MB-1 or Alpha 7
3. Ocu-guard MB-1 (not necessary if using Alpha 7/MB-1)
4. Deworm w/ Synanthic

Calves

1. Express 5 or Pyramid 5 + Presponse SQ
2. Alpha 7/MB-1 or Caliber 7
3. Ocu-guard MB-1 (not necessary if using Alpha 7/MB-1)

Pre-Weaning/Weaning:

Calves – Three to four weeks prior to weaning

1. Express FP10 (Pyramid 10 can be used for non-breeding animals)
2. Alpha 7/MB-1 or Caliber 7
3. Presponse HM
4. Deworm w/ Synanthic

Calves – Booster at Weaning

1. Express FP10 (Pyramid 10 can be used for non-breeding animals)
2. Caliber 7 (Booster required only for Caliber 7 not Alpha 7/MB-1)
3. Presponse HM (Optional—if given Pyramid 5 + Presponse SQ in spring)

*** *If Alpha 7 or Alpha 7/MB-1 is used in calves in the spring, only one booster of Alpha 7/MB-1 or Caliber 7 is required for pre-weaning/weaning vaccination. Caliber 7 is recommended to reduce the occurrence of knots.*

Preg-Check:

1. TriVib 5L or Citadel VL5
2. Deworm thin cows and heifers w/ Synanthic and/or Cydectin

Pre-Calving:

1. ScourGuard 4KC, Scour Bos 9, or Guardian
 - a. Cows—One month prior to calving (6 weeks for Guardian)
 - b. Bred Heifers—Two months prior to calving w/ booster one month prior to calving
2. De-lice w/ non-generic pour-on (Ultra Boss, Saber, Cylence, StandGuard)

WV Beef Quality Assurance Comprehensive Herd Health Program

Vaccination Protocol—Merck

Pre-breeding:

Cows/Bulls (Post-calving but 30-60 days prior to breeding)

1. Vista 5 L5 SQ
2. Piliguard Pinkeye TriView
3. Deworm first calvers w/ Safeguard—Older cows not necessary

Yearling Replacement Heifers

1. Vista 5 L5 SQ
2. 20/20 Vision 7 with Spur or Vision 7/8 with Spur
3. Piliguard Pinkeye TriView (not necessary if using 20/20 Vision 7 with Spur)
4. Deworm w/ Safeguard

Calves

1. Vista Once SQ
2. 20/20 Vision 7 with Spur or Vision 7/8 with Spur
3. Piliguard Pinkeye TriView (not necessary if using 20/20 Vision 7 with Spur)

Pre-Weaning/Weaning:

Calves – Three to four weeks prior to weaning

1. Vista 5 L5 SQ
2. Once PMH SQ or Once PMH IN
3. 20/20 Vision 7 with Spur or Vision 7/8 with Spur
4. Safeguard

Calves – Booster at Weaning

1. Vista 5 L5 SQ
2. Once PMH SQ or Once PMH IN
3. 20/20 Vision 7 with Spur or Vision 7/8 with Spur

Preg-Check:

1. Spirovac VL5 or StayBred VL5 (*Pfizer products—Merck does not offer a pregnancy protection vaccine.*)
2. Deworm thin cows and heifers w/ Safeguard

Pre-Calving:

1. Guardian
 - a. Cows—Six weeks prior to calving
 - b. Bred Heifers—Three months prior to calving w/ booster six weeks prior to calving
2. De-lice w/ non-generic pour-on (Ultra Boss, Saber, Cylence, StandGuard)

*** 20/20 Vision 7 with Spur offers pinkeye protection. Vision 7/8 with Spur can be used as a substitute but does not offer pinkeye protection.

WV Beef Quality Assurance Comprehensive Herd Health Program

Vaccination Protocol—Zoetis

Pre-breeding:

Cows/Bulls (Post-calving but 30-60 days prior to breeding)

1. Bovi-shield Gold FP5 L5 or Bovi-shield Gold FP5 L5 HB
2. SolidBac Pinkeye IR/PR Implants (Pfizer) or Piliguard Pinkeye TriView (Merck)
3. Deworm first calvers w/ Valbazen—Older Cows not necessary

Yearling Replacement Heifers

1. Bovi-shield Gold FP5 L5 or Bovi-shield Gold FP5 L5 HB
2. UltraChoice 8
3. SolidBac Pinkeye IR/PR Implants (Pfizer) or Piliguard Pinkeye TriView (Merck)
4. Deworm w/ Valbazen

Calves

1. Bovi-shield Gold 5 or Bovi-Shield Gold One Shot
2. One Shot Ultra 8 or UltraChoice 8
3. SolidBac Pinkeye IR/PR Implants (Pfizer) or Piliguard Pinkeye TriView (Merck)

NOTE: Use UltraChoice 8 with Bovi-Shield Gold One Shot and One Shot Ultra 8 with Bovi-Shield Gold 5

Pre-Weaning/Weaning:

Calves – Three to four weeks prior to weaning

1. Bovi-shield Gold FP5 L5 or Bovi-shield Gold FP5 L5 HB
2. One Shot Ultra 8
3. Deworm w/ Valbazen

Calves – Booster at Weaning

1. Bovishield Gold FP5 L5 or Bovishield Gold FP5 L5 HB
2. One Shot Ultra 8

Preg-Check:

1. Spirovac VL5 or StayBred VL5
2. Deworm thin cows and heifers w/ Valbazen and/or Dectomax

Pre-Calving:

1. ScourGuard 4KC
 - c. Cows—One month prior to calving
 - d. Bred Heifers—Two months prior to calving w/ booster one month prior to calving
2. De-lice w/ non-generic pour-on (Ultra Boss, Saber, Cylence, StandGuard)

WV Beef Quality Assurance Comprehensive Herd Health Program

Vaccination Tips

To maximize vaccine efficacy, always do the following:

1. Always:
 - Read product labels prior to use
 - Follow BQA Guidelines
 - Follow withdrawal times
2. Keep vaccines cool at all times—shipment, storage, and during use.
3. Change needles frequently (10 or less cows/needle)
4. Use subcutaneous (SQ) route of administration when possible.
5. Administer vaccines only when temperature is less than 86° F.
 - Early morning or late evening on hot days
6. Never put a used needle in a clean bottle of vaccine.
7. Do not reuse disposable needles and syringes.
8. Use both sides of the neck when giving multiple vaccines.
9. Use 16 - 18 gauge needles.
 - Subcutaneous (SQ)—5/8 – 3/4 in.
 - Intramuscular (IM)—1 in.
10. When using Modified Live Vaccines (MLV), only mix amount of vaccine that can be used within one hour or less.
11. Modified live virus (MLV) programs must be initiated in open cows, and MLV vaccines cannot be used in calves suckling cows not previously administered a MLV vaccine.
12. Avoid administering more than two (2) gram negative vaccines at one time. Gram negative vaccines include:
 - Lepto
 - Vibrio
 - Pastuella/Mannheimia
 - Pinkeye
 - Salmonella
 - E. coli
13. Record vaccine name, lot number, serial number, expiration date, date administered, and withdrawal time.

Animal Health Short Course

Agenda Session IV April 11, (April 18, Snow date)

- | | |
|-------------|--|
| 6:00 - 6:05 | Announcements (Shockey) |
| 6:05 - 7:00 | Preparation for Breeding Season (Straight) |
| 7:00 - 7:15 | Break |
| 7:15 - 8:00 | Small ruminant/Camelid Management (Moran) |
| 8:00 - 9:00 | BQA - Topic to be determined (Shockey) |

Preparing for the Breeding Season

Alexandria Straight- ANR Agent Hardy and Hampshire Counties

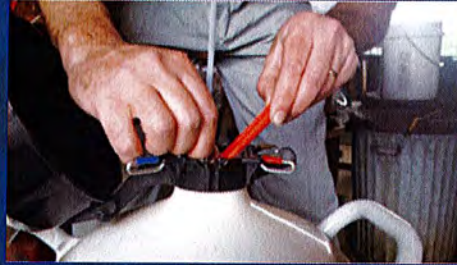
Brad Smith – ANR Agent Grant County

Female Reproduction

- Female serves several functions in reproduction:
- Provide ova (eggs)
- Provide proper environment for fertilization
- Nurture the embryo/fetus (gestation)
- Deliver fetus to exterior
- Feed the young (lactation)
- Provide for proper behavior patterns
- Attracting male and mating

Factors Affecting Conception

- Management
- Nutrition
- Disease/Parasites
- Body Condition
- Season
- Do Not Cut Corners
- Semen Quality

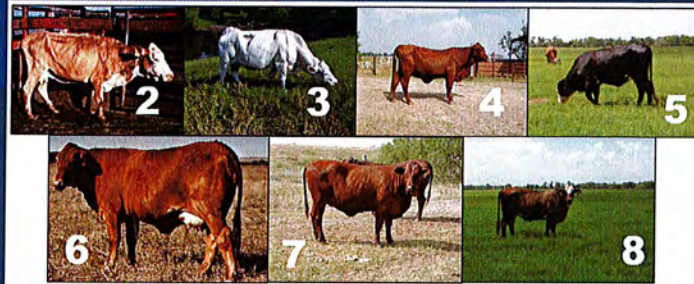


 EXTENSIONSERVICE

Agriculture and Natural Resources

BCS in Beef Cattle

- Importance in monitoring herd nutritional status
- Varies throughout the year
- Ranges from 1(thin) to 9 (obese)
- Utilize to manage feeding practices
- **Prepare animals before “need”**
- Close link between BCS and many factors



<https://animalscience.tamut.edu/2017/08/08/some-thoughts-on-body-condition-scoring-of-cows/>

 EXTENSIONSERVICE

Remember: A Beef Cows job is to make a Calf

- Strong link between low BCS and...
 - Reproductive performance/open cows
 - Failure to cycle
 - Failure to conceive
 - Calving interval
 - Calf vigor at birth

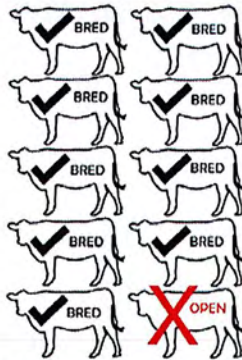


<http://www.mbeef.org/beefproduction.aspx>

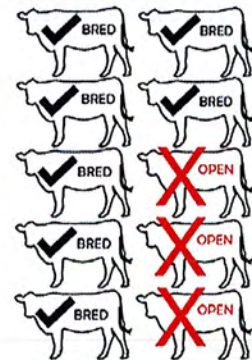
EXTENSIONSERVICE

BODY CONDITION RELATES TO INTERVAL FROM CALVING TO FIRST HEAT

BCS	Post-Partum Interval (Days)	
3	89	} 80
4	70	
5	59	} 55
6	52	
7	31	



BCS ≥ 5 = 88% Bred



BCS ≤ 4 = 69% Bred

<https://beef.unl.edu/learning/condition1a.shtml>


<http://www.wyoextension.org/publications/html/B1294/>

EXTENSIONSERVICE

Table 1. Description of Body Condition Scores in Beef Cattle. (after Sprott and Herd, undated)

1	Severely emaciated - no fat observed, backbone, tail head and ribs are prominently visible.
2	Emaciated - little visible muscle tissue, backbone, tail head and ribs less visible.
3	Very thin - no fat over ribs or brisket, backbone still easily visible (about 0.05 inches of fat cover).
4	Borderline - individual ribs noticeable, overall fat cover is lacking, there is increased musculature over shoulders and hindquarters, hips and backbone slightly rounded (about 0.10 inches fat cover).
5	Moderate - increased fat cover over ribs, only 12th and 13th ribs visible, tail head full or flat but not rounded (about 0.20 inches fat cover).
6	Good - back, ribs and tail head slightly rounded and spongy when palpated, fat deposition in brisket (about 0.30 inches fat cover).
7	Fat - cow appears fleshy and carries fat on back, tail head and brisket, ribs are not visible, some udder fat (about 0.40 inches fat cover).
8	Very fat - squared appearance due to excess fat over back, tail head and hindquarters, fat deposition in brisket and along ribs and in udder (about 0.55 inches of fat cover).
9	Obese - fatter than BCS 8 with more fat in udder (about 0.70 inches of fat cover).

<https://animalscience.tamu.edu/2017/08/08/some-thoughts-on-body-condition-scoring-of-cows/>

 **EXTENSIONSERVICE**


Timing

- **Goal of BCS 5-7 at time of calving**
 - May require increasing or decreasing feed prior to
 - Expect a drop in BCS from lactation demand post-calving
 - It's hard to increase BCS after calving
- **Goal of BCS 6 or higher at breeding**
 - About 90 days after calving
 - May be difficult during winter calving
 - This is when nutritional management is most important
- **IDEALS WILL VARY WITH DIFFERENT HERDS AND LOCATIONS**

 **EXTENSIONSERVICE**

BCS Scoring in Sheep

- **Sheep are hard to assess visually**
 - Wool cover prevents “eyeballing” them most of the time
 - Scale from 1 to 5 (thin to obese)
 - Usually 0.5 increments
 - Age, pregnancy and wool can affect interpretation of BCS
- **Parasitism is a serious health concern**
 - BCS monitoring can help find “outliers” in a flock
 - Causes weight loss
 - Failure to gain (as a flock or individually)

 **EXTENSIONSERVICE**

Need To Be Hands On!

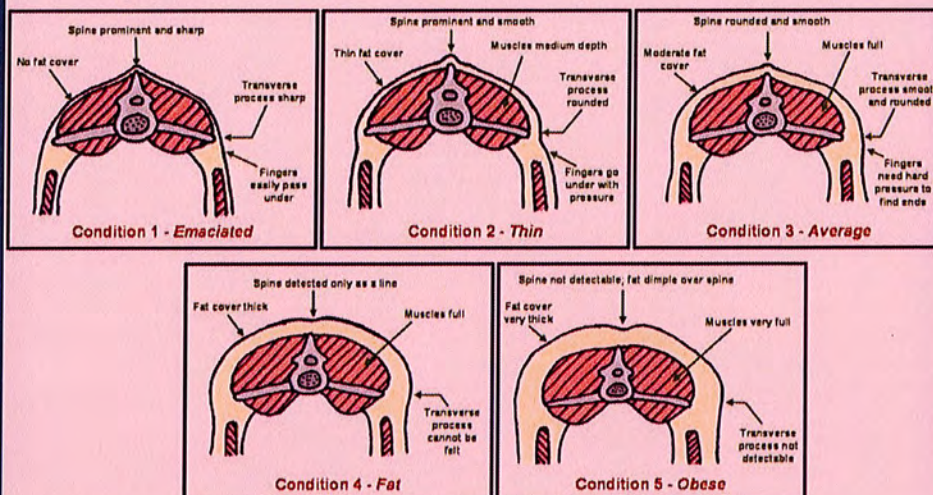
- It can be obvious to see a 1 or a 5, but you can not do a real assessment of a flock without being hands on.



<http://www.sheep101.info/201/feedingewes.html> <http://www.infonet-biovision.org/AnimalHealth/Sheep-new-animal-welfare-information>

 **EXTENSIONSERVICE**

Body Condition Scores – Sheep/Goats



Adapted from "Body Condition Scoring of Sheep" by J.M. Thompson and H. Meyer (Oregon State University)

UK UNIVERSITY OF KENTUCKY
College of Agriculture
Department of Animal Sciences



Breeding Soundness Evaluation Components

- Physical Exam/Conformation Faults
- External and Internal Genital Exam
- Semen Exam
- Classification

EXTENSIONSERVICE

Physical Exam Eyes

squamous cell carcinoma



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 EXTENSIONSERVICE

Physical Exam Teeth

examining the oral cavity

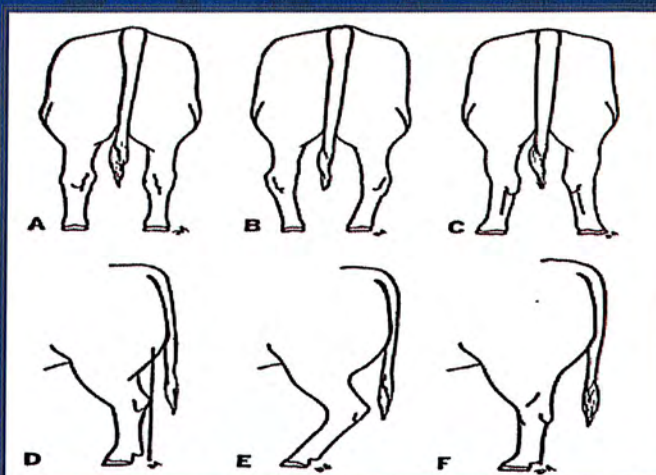


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 EXTENSIONSERVICE

Feet & Legs

- Locomotion--Critical.
- Sickie Hocked
- Cow Hocked
- Post Legged
- Crooked Legs/Feet
- Footrot
- Interdigital Growths



 EXTENSIONSERVICE

Proper Tape Placement



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 EXTENSIONSERVICE

Measurement

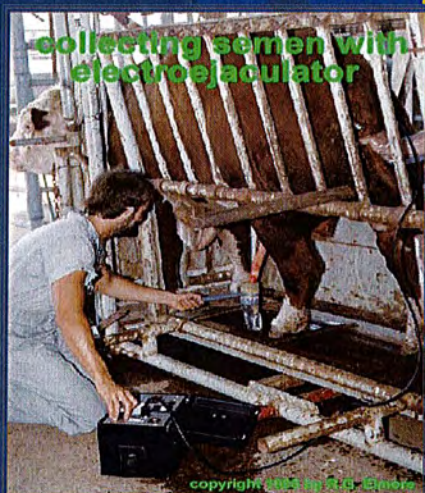
Minimum Recommended Scrotal Circumference in Centimeters by Age for Bulls^a

Age (months)	Scrotal Circumference (cm)
≤15	30
>15<18	31
>18<21	32
>21<24	33
>24	34

^a Adapted from the Breeding Soundness Evaluation Form, Society for Theriogenology, Hastings, NE

 EXTENSIONSERVICE

Electroejaculation



 EXTENSIONSERVICE

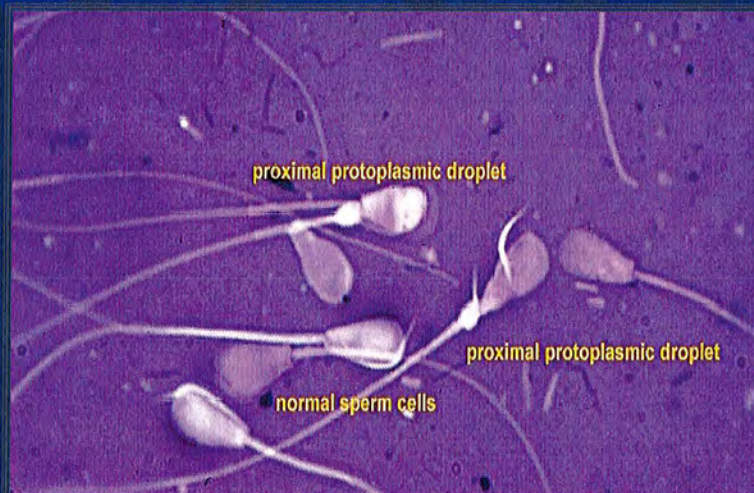
External Exam of Penis & Prepuce

- Incomplete Extension
- Frenulum
- Hair Rings
- Fibropapillomas (Warts)
- Prolapse of Prepuce
- Lacerations
- Adhesions



 EXTENSIONSERVICE

Common Sperm Abnormalities



 EXTENSIONSERVICE

Economics of Testing

- 10-20% of All Bulls Tested will Fail the Examination
- Some Bulls that Pass will have Substandard Fertility Compared to Others
 - BSC don't evaluate libido
 - Pass the Standards, but have Inherent Infertility

 EXTENSIONSERVICE

Economics of Testing

- 35 Cows x 7% = 2.5 extra calves/bull
- Open Cow Value: 1200lb x \$.50/cwt = \$600
- Bred Cow Value 2nd Stage: App. \$900
- Difference/Cow = \$300 x 2.5 = \$750/bull
- Soundness Exam = \$35-40/bull

20% Return on Investment!

 EXTENSIONSERVICE

AI

- What is AI?
- Factors Affecting Conception
- Advantages/Disadvantages
- Anatomy
- Reproduction Cycle
- Synchronization Methods
- Equipment
- Techniques



 EXTENSIONSERVICE

Agriculture and Natural Resources

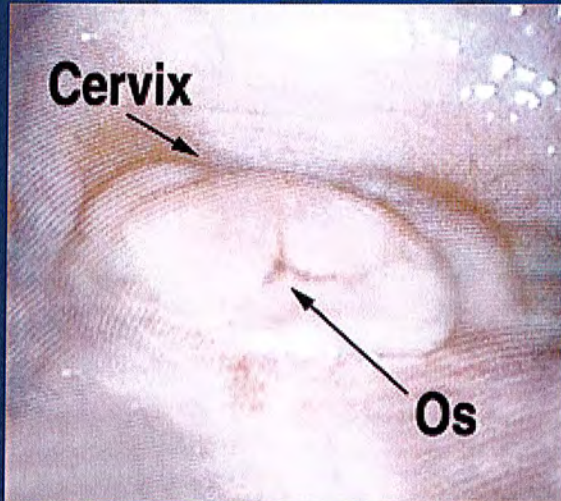
Selection of females for AI

- Good health & free of disease
- Reproductively sound,
- “Flush” feeding for 2-5 weeks before breeding
- Body condition score of 2.5 to 3

 EXTENSIONSERVICE

Agriculture and Natural Resources

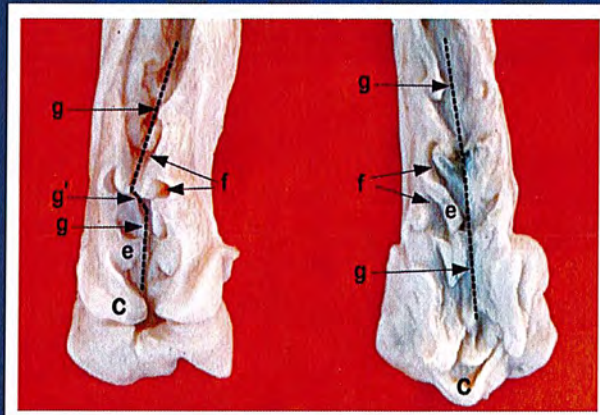
External Os



EXTENSIONSERVICE

Agriculture and Natural Resources

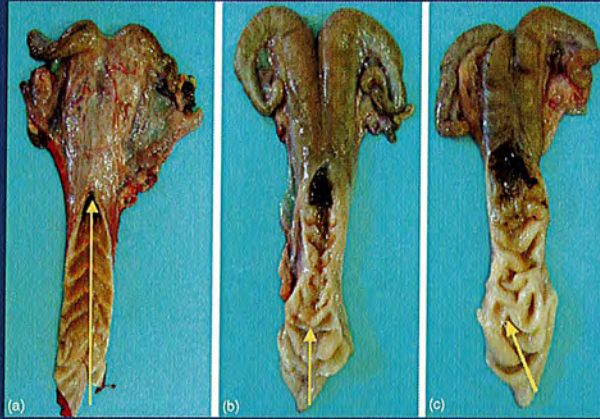
Goat Cervix



EXTENSIONSERVICE

Agriculture and Natural Resources

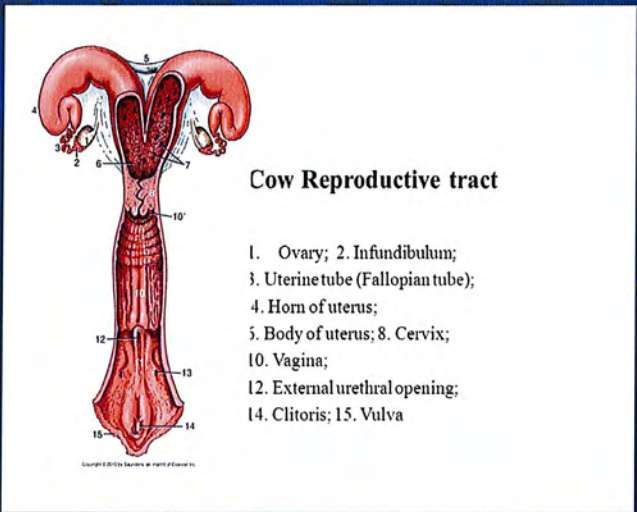
Sheep Cervix



EXTENSIONSERVICE

Agriculture and Natural Resources

Cow Cervix



EXTENSIONSERVICE

Agriculture and Natural Resources

	COW	EWE	SOW	MARE	DOE
Estrus cycle (d)	21	17	21	21	21
Proestrus (d)	3-4	2-3	3-4	2-3	2-3
Estrus (hr)	12-18	24-36	48-72	4-8	
Metestrus (d)	3-4	2-3	2-3	2-3	3-4
Diestrus (d)	10-14	10-12	11-13	10-12	12-14

Insemination Timing

When to breed for best success? 6-28 hours after the onset of heat *

Heat Period	Before heat	Standing heat **						After standing heat				After heat
Hours after onset of heat		0	3	6	9	12	15	18	21	24	27	
When to breed for best success	Too early to breed			Good time	Excellent Time To Breed				Good time	Too late to breed		

* Heat: the female reproductive cycle

** standing heat: that point in a doe's heat cycle when she is receptive to the buck

Signs of Estrus

- Seasonally Polyestrous and Short Day Breeders (Small Ruminants)
- Stands to be mounted
- Vocal
- Flagging Tail
- Searches out a Male – Walking the fence line
- Restlessness
- Loss of Appetite
- Decrease Milk Production
- Frequent Urination
- Red Swollen Vulva – Mucous Discharge

Estrus Synchronization

- Heat Check
 - – Series of Prostaglandin shots 10 days apart with heat check and breeding
- • NC Synch
 - – Combination of Prostaglandin and GnRH shots followed by AI
- • CIDR's
 - – Insertion of a Progesterone control device with a combination of Prostaglandin and FSH shots

Estrus Synchronization Methods

- Heat Check



- NC Synch



- CIDR's



Protocol for synchronization of ewe for artificial insemination



CAMELID / ALPACA PHYSIOLOGY & HUSBANDRY

David D. Moran, Ph.D.
West Virginia University

12 April 2019

Objectives & Learning Outcomes

- What's an Alpaca?
- Potential of Camelid as livestock.
- Background on the Camelid Livestock Industry.
- Background South and North America Camelids.
- Camelid physiology, nutrition, reproduction and husbandry.
- Foundation-level for alpaca livestock judging certification.
- Basic veterinary medical background and livestock management.

Advantages of Alpaca as Livestock

**** Eleven F's ****

1. **Farm Friendly and Fun**
2. **Fame**
3. **Farm Facility**
4. **Fortune**
5. **Fellowship**
6. **Fastidiousness**
7. **Fleece**
8. **Food**
9. **Fertilizer**
10. **Fertility & Frequency of Birth**
11. **Fitness**



Llama



Huacaya Suri

Alpaca



Guanaco



Vicuña

Alpaca Physiology A&VS 293M David D. Moran, Ph.D.

Comparisons of South American Camelids

Table 4.2. Comparative weight and height of South American camelids

SPECIES	BIRTH WEIGHT		ADULT WEIGHT		HEIGHT AT WITHERS
	Pounds (Kilograms)		MALE	FEMALE	
ALPACA	8-23 (3.6-10.4)	132-176 (60-80)	105-170 (47.6-77)		S.A.: 35-41 (90-104) N.A.: 31-38 (78.7-96.5)
VICUNA	9.7-19.2 (4.4-8.7)	80-143 (36-65)	66-88 (30-40)		34-38 (86-96)
LLAMA	18-45 (8-20)	286-540 (130-245)	238-500 (108-227)		43-47 (110-120)
GUANACO	18-33 (8-15)	220-330 (100-150)	220-264 (100-120)		S.A.: 43-45 (110-115) N. A.: 43-47 (110-120)

REF: Hoffman, The Alpaca Book

Alpaca Physiology WVU - A&VS 293M David D. Moran, Ph.D.

Alpaca Physical description

Pseudo-Ruminants	3 Stomachs
Alpaca	
Lifespan	15 – 25 Years
Height	36” at withers
Weight	100 -175 pounds
Fleece	Suri or Huacaya
Colors	White to Black (22 basic colors)
Intelligence	High, trainable
Herd Instinct	Moderate
Gestation	355 Days
Birth Weight	15 – 20 pounds
Stand and Nurse	30 – 60 Minutes
Weight gain	½ - 1 pound per day (double in 30 days)

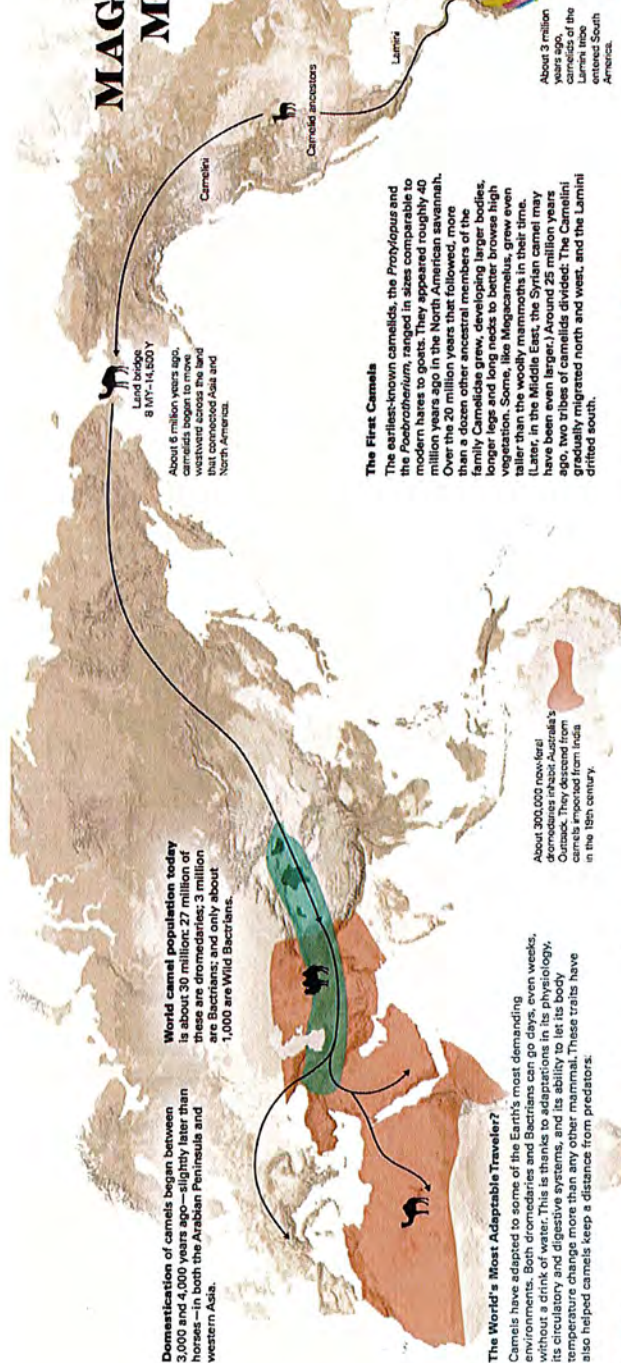
REF: AOBA “Alpacas” 1995

Camelid/Alpaca Physiology and Husbandry

- Designation:** A&VS 293M
- Credits:** 3 Credit – Covered in 11 weeks of 2 x 1 ¼ hour classes
- 2 field labs, 2 in-house labs and 1 shearing lab
- Time:** Spring 2008, Odd numbered years.
- Instructor:** David D. Moran, Ph.D.
- Description:** The course is designed as a graduate-level or senior-undergraduate level introductory course to the veterinary management of South American Camelids, Alpaca, Llama, Vicuña, and Guanaco.
- The course will consist of sequential lectures and discussions centered around current research data.

THE MAGNIFICENT MIGRATION

Best known today for inhabiting hot, arid regions of North Africa and the Middle East, as well as colder steppes and deserts of Asia, the family Camelidae had its origins in North America. The signature physical features of camels today—one or two humps, wide padded feet, well-protected eyes—as adaptations to North American winters.



Domestication of camels began between 3,000 and 4,000 years ago—slightly later than horses—in both the Arabian Peninsula and western Asia.

World camel population today is about 30 million: 27 million of these are dromedaries; 3 million are Bactrians; and only about 1,000 are Wild Bactrians.

Land bridge 8 MY–14,500 Y
About 6 million years ago, camels crossed the land westward across the land that connected Asia and North America.

The First Camels
The earliest-known camelids, the *Protylops* and the *Poebrotherium*, ranged in sizes comparable to modern hares to goats. They appeared roughly 40 million years ago in the North American savannah. Over the 20 million years that followed, more than a dozen other ancestral members of the family Camelidae grew, developing larger bodies, longer necks, and thicker browses high in vegetation. Some, like *Megacamelus*, were even taller than the woolly mammoths in their time. (Later, in the Middle East, the Syrian camel may have been even larger.) Around 25 million years ago, two tribes of camelids divided: The Camelini gradually migrated north and west, and the Lamini drifted south.

About 300,000 new-feral dromedaries inhabit Australia's Outback. They descend from camels imported from India in the 19th century.

The World's Most Adaptable Traveler?
Camels have adapted to some of the Earth's most demanding environments. Both dromedaries and Bactrians can go days, even weeks, without a drink of water. This is thanks to adaptations in its physiology, its circulatory and digestive systems, and its ability to let its body temperature rise above that of any other mammal. These traits have also helped camels keep a distance from predators.

Circulation
Blood cells that can swell up to three times their normal size are what allow the camel to drink so much water. As it uses water, the same cells narrow to keep flowing, allowing the camel to become more dehydrated than other mammals.

Eyes
Camels see well in both bright desert sun and at night. Their eyelids are semitransparent, which allows a camel to walk with its eyes shut. Extra-long eyelashes also protect against sand and dust.

Nose
Camel's nose does its nostrils. The hump keeps out sand, and it also helps cool exhaled air, which helps conserve water.

Humps
Camels store fat, not water. This fat in the hump is a reserve of energy when no vegetation is available for grazing.

- Dromedary
- Bactrian
- Wild Bactrian
- Lama
- Vicuña
- Guanaco
- Alpaca



Dromedary (*Camelus dromedarius*)
Weight: 400–600 kilograms
Shoulder height: 1.6–2 meters

Bactrian (*Camelus bactrianus*)
Weight: 600–1,000 kilograms
Shoulder height: 1.6–1.8 meters

Camelops
4 MY–10,000Y

Megacamelus
10–5 MY

Aspucamelus
21–5 MY

Procamelus
22–5 MY

Poebrotherium
40–32 MY

Alpaca Physiology A&VS 293M David D. Moran, Ph.D.

Recordkeeping Basics

Directions: Take notes on the different components of recordkeeping.



Health

DATE Route/Location
Animal ID Withdrawal time
Approx Wt. Name of Person
Product (Serial#/Lot#)
Dosage



Feed

Feed records
Medicated feeds
Invoice /date/amount
Maintain 2yrs VFD



Chemical

Date/Time
Product
Name of Applicator
EPA #
Time Restrictions



Pesticide

Product ID
Serial/Lot#
Date
Amount
Name of person
Animal(s) exposed
Withdrawal times



Time

Keep all records
3 years
The complete history
of the animals
should be transferred
with the cattle at
the next production/market level





Components of Biosecurity

Directions: Take notes on the five components of biosecurity.

	Component	Notes on Component
A	Assessment	General evaluation of the potential for disease organisms to enter the herd from outside entities
R	Resistance	Ability to reject or contend an infectious agent
I	Isolation	Minimize commingling of New Cattle (observation pens) Quarantine purchased cattle (pasture)
T	Traffic Control	External Roads Feed Storage Area Internal Roads (only designated feed handling equipment) Feed & Water
S	Sanitation	Clean equipment & facilities between groups (observation pens)

Euthanasia Tools

Directions: Capture information on each tool used for euthanasia purposes.

	within 3 feet of target // perpendicular (or larger) .32 calves .38 or larger Cows
	within 3 feet of target // perpendicular (or larger) .22 LR Calves .22 magnum Adults
	within 3 feet of target // perpendicular 14 to 12 gauge Calves 20 to 12 gauge adults
	#4 to #6 birdshot or slug Restrain to avoid missing target

Euthanasia Location

Directions: Mark the optimal point of entry for euthanasia on the images.

Signs of unconsciousness

- Absence of corneal reflex
- Absence of vocalization
- Absence of gag reflex
- Lack of rhythmic respiration
- No coordinated attempt by animal to rise or right itself








Cattle Handling

Directions: Fill-in-the blanks for each statement on cattle handling.

1. Cattle are herd animals and they are likely to become highly agitated and stressed when they are separated from their herd mates.
2. Understanding flight zone can reduce ^{or decrease} stress and help prevent ^{or decrease} accidents.
3. Cattle's eyes are on the Sides of their heads; therefore, cattle have approximately 310° vision, leaving a blind spot directly behind them.

Handling Aids




Directions: Take notes on each cattle handling aid.

	<p>Cattle move from dark to light. Spot light directed onto chute helps movement</p>
	<p>Alley walls should be solid to avoid distractions</p>
	<p>Minimize use of electric prods (hot shots) <u>Do NOT use</u> on Eyes/nose, rectum, genitalia, or udder!!</p>
	<p>Use long handled paddles or flags to <u>quietly</u> guide animals.</p>
	<p>Learn appropriate use of body language, Speed, amount of movement, clothing, and direction of movement.</p>

Limit excessive noise from equipment
or other sources near handling area

Fitness for Transport

Directions: Take notes on the considerations to take when deciding if animals are fit for transport.




		
Fit for Transport	Transport with Special Provisions	Do Not Transport
<p>Normal Temperature No limp</p>	<p>Recent minor injury No lameness bloat</p>	<p>Non-weight bearing on any leg Difficulty walking</p> <hr/> <p>Nasal Discharge Panting Lethargic</p>

Transport to emergency processing facility
Segregated in small compartment

If non-ambulatory, he can't walk because of injury, such as a broken leg, you should euthanize the animal.

Calf Processing Best Practices

Directions: Take notes on each calf processing activity.

<p>Branding*</p> 	<p>- Shows ownership and permanent ID - Brand before 3 months of age - Hot iron or freeze / Train operators</p>
<p>Dehorning*</p> 	<p>- Reduces injury of animals & humans - Dehorn before 3 months / ASAP before bud stage - Hot irons, spoons, paste / Train operators</p>
<p>Castration*</p> 	<p>- Reduces aggression / eliminates pregnancy - Castrate before 3 months, or at 1st opportunity - Surgical knife, blade cut, banding / Train operators</p>

*You should develop a protocol in consultation with your veterinarian for calves older than 3 months (90 days).