

Standard Operational Procedures (SOP)
for the South Animal Science Farm

ANIMAL HERD HEALTH PROGRAM

ACTION	RESPONSIBILITY
I. Movement of Animals	
A. Animals arriving at farms	
1. Advance notice to the clinical veterinarian (CV) and farm manager	Farm Manager (FM)/ Principal Investigator (PI)
2. Health requirements	
a. USU Health Certificate	
Obtain all required signatures	PI/FM
Original to CV, copy to FM	
3. Quarantine (dependent on species & disease threats)	
a. Special tests required	CV
b. Location of animals	CV
c. Special procedures required	Joint (FM, CV, PI)
d. Immunizations/anthelmintics	CV
e. Feeding and handling of quarantined animals will be done last. If pens are entered and/or animals handled, coveralls and boots must be changed and washed immediately afterwards, or disposable coveralls and boot covers disposed of.	Joint
B. Animals leaving the farm	
1. Advance notice to CV for specific requirements. ex: Health papers, permit, drug clearance, special tests, etc.	FM/PI
II. Animal Health Management	
A. Daily observation	Caretaker
B. Establish an immunization and anthelmintic program (see attached recommendations)	Joint
C. Follow an established immunization and anthelmintic routine. (See attached recommendations)	PI/FM
D. In case of illness or injury	
1. Notification of CV	Caretaker/FM
2. Notification of PI	Caretaker/FM
3. Diagnosis of disease or injury	CV/Attending Veterinarian (AV)
4. Treatment	
a. General illness	CV supervised
b. Illness related to experimental protocol	AV supervised
5. Isolation and treatment	
a. General	CV supervised

- b. Experimental AV supervised
 - 6. Release back to research CV/AV
 - E. Animal Deaths
 - 1. All animals which die must be reported
 - a. To the PI Caretaker/FM
 - b. To the CV and AV Caretaker/FM
 - c. Delivered to the Diagnostic Laboratory unless Joint
deemed unnecessary by the CV

III. In Reproducing Animals

A. Parturition procedures

- 1. Be clean Caretaker
- 2. Allow time for normal delivery Caretaker
- 3. Assist when needed with normal presentation Caretaker/FM
- 4. Never have more than 1-2 people pull (arm power only) Caretaker/FM
(Mare or Cow: 2 people, sm. Ruminants: 1 person)
- 5. If not making headway in 20 minutes, call clinician Caretaker/FM
- 6. If examining, then:
 - a. Tie tail out of way Herdsman/FM
 - b. Wash area with mild soap and warm water Herdsman/FM
 - c. Wash and lubricate hands and arms Herdsman/FM
 - d. Normal delivery of fetus Herdsman/FM
 - e. Dystocia, call clinician Herdsman/FM

B. Newborn procedures

- 1. Iodine naval (povidone Iodine such as Betadine) Herdsman
- 2. Enteritis (scours)
 - a. Feed procedures (see below) Herdsman
instigate if observe diarrhea
 - b. If dehydrating (IV fluids, misc. treatment) CV

IV. South Farm

A. Beef

- 1. Immunizations
 - a. See attachment** (Herd Health Calendar) Joint
 - b. Miscellaneous (evaluation) CV
- 2. ID tags, fly tags (May - Sept) FM
- 3. Dehorning FM
- 4. Castrating** Joint
- 5. Nutrition** FM(Joint)
- 6. Reproduction**
 - a. Breeding soundness exam on bulls** CV
 - b. Breeding FM
 - c. Pregnancy examination (2-4 months) CV
 - d. Hormone and synchronization CV (Joint)
 - e. Parturition (see Page 3)
- 7. Disease diagnosis CV

8. Treatment (all sick animals)	CV/FM
9. Dead animals (see #II above)	
10. Culling	FM (Joint)
11. Veterinary medicines	CV
12. Special injections - vitamins and selenium	Joint
B. Sheep and Swine	
1. Immunization	
a. See attached sheets	Joint
b. Miscellaneous (evaluation)	CV
2. Diagnosing and treatment	CV
3. Prevention programs (example: foot rot)	Joint
4. Special birthing procedures	
a. Crutching ewes	Herdsman
b. Lambing/farrowing assistance	Joint
C. Provide veterinary medicine	CV

FEEDING SCHEDULE FOR SCOURING CALVES

(Can be adjusted for lambs, kids and piglets)

Day 1 and 2

Oral alkalinizing electrolytes (Entrolyte and Biolyte)

Followed in 1-3 h by 1/2 normal milk (2-4 times/day depending on dehydration)

Day 3 - 5

Oral electrolytes (Deliver, Resorb or similar form)

Followed by full milk in 1-3 h (2-4 times/day as above)

Day 3 if no response* until resolution

Oral electrolytes

Followed by consomme formula in 1-3 h (2-4 times/day as above)

1 package pectin

2 tablespoons pepto-bismol

1 teaspoon salt

2 teaspoons baking soda

1 can beef consomme

warm water to make 2 quarts

*In severe cases, feed this formula every 6 hours.

PRE-ENTRY DISEASE SCREENING

The basic disease screening measures as enforced by the State of Utah are listed below. In every

actual situation however, these will serve only as the minimum. Based on the proposed use of the incoming animals, the location where they will be housed, the exposure potential to other animals, and other epidemiological factors, actual requirements may vary. Any additional requirements must be determined well in advance of the date of expected departure from the point of origin. Therefore, appropriate advanced communication with the Clinical Veterinarian and Farm Committee must be made.

SPECIES	DISEASE
Bovine:	<p>Disease check: TB (intradermal injection), Brucellosis (abortus)</p> <p>Vaccinations: Recommended vaccinations: IBR, PI3, BSRV, BVD, 7 or 8-way clostridium, vibrio, lepto.</p>
Caprine:	<p>Disease check: TB (intradermal injection), Brucellosis, Caseous Lymphadenitis</p> <p>Vaccinations: Recommended vaccinations: Clostridium perfringens C,D, tetanus and contagious ecthyma if indicated.</p>
Equine:	<p>Disease check: EIA</p> <p>Vaccinations: Recommended Vaccinations: EHV1,3,4, EIV, EEV</p>
Ovine:	<p>Disease check: Free of communicable diseases; in particular, Blue Tongue, Brucella ovis, and Foot Rot (physical inspection).</p> <p>Vaccinations: Recommended vaccinations: Clostridium perfringens C, D, Caseous Lymphadenitis DT, tetanus, contagious ecthyma, vibrio, (lepto and enzootic abortion, if indicated)</p>
Porcine:	<p>Disease check: Pseudorabies and Brucellosis (30 day retest required for both), Erysipelas, Leptospirosis serology negative or certification of vaccination. State Required - 18 day quarantine.</p> <p>Vaccination: Recommended vaccinations are dependant on age and proposed use.</p>

Vaccinations and Parasite control: These aspects are to be established by the Farm Managers and farm committees. Required vaccinations and anthelmintic treatments are situation and farm dependant.

HERD HEALTH CALENDAR - BEEF CATTLE

JANUARY

- Copper supplement in salt
- 1-10 first calf heifers: vaccinate
 - E. coli scours vaccine
 - 8-Way Clostridial
 - Vibrio, Lepto-5

FEBRUARY

- Copper supplement in salt
- 20 heifers: begin calving
- 20 cows
 - Move to Richmond
 - Liver fluke treatment with Clorsulon or Ivomec Plus
 - Vaccinate
 - E. coli scours vaccine
 - Vibrio and Lepto-5
 - 8-Way Clostridial (or could do Redwater later)

MARCH

- Copper supplement in salt
- 1 to May 10: Calve heifers and cows
 - Tag calves
 - Weigh calves
 - Iodine on navel
 - Colostrum
 - Observe: dystocia, scours, pneumonia

- 27-31 Vaccinate replacement yearling heifers (1st dose)
 - Vibrio (Campylobacter)
 - Lepto (5-strain), first dose
 - MLV virus: IBR, PI3, BRSV, BVD

APRIL

- Continue Calving
- Copper supplement in salt

- 17-21 Vaccinate replacement yearling heifers (2nd dose)
 - Vibrio, Lepto-5 (2nd dose)
 - 8-Way Clostridial

- 1-10 Bulls
 - Breeding soundness evaluation
 - Trich test
 - Vaccinate
 - Vibrio
 - Lepto-5

8-Way Clostridial
MLV: IBR, PI3, BRSV, BVD

- 1-10 Vaccinate Accelerated growth project cows
Vibrio
Lepto-5
Tag changes

MAY

- Continue Calving
Copper supplement in salt
8 begin AI of heifers (begin calving Feb.)
23-24 move cows and calves to pastures

COWS

- Weigh
Tag corrections
Fly tags/Spray for flies
Body condition score
Vaccinate: Vibrio, Lepto-5, 8-Way Clostridial
Fecal exams: nematodes, flukes
Blood samples: copper, or as deemed necessary

CALVES

- Weigh
Tag corrections
Fly tags/Spray for flies
Body condition score
Dehorn/castrate
Vaccinate
8-Way Clostridial
Intranasal MLV: IBR, PI3, BRSV, BVD
Fecal exams: nematodes, flukes
Blood samples: copper, or as deemed necessary
Separate to two groups; with dams

BULLS

- Put in with cows (begin calving March)
Fly tags/Spray

JUNE

- Continue breeding
Copper supplement in salt
Maintain electric fence
Rotation grazing through pastures

26-27 Work cattle
Cows
 Weigh
 Tag corrections
 Spray for flies
 Body condition score
 Fecal exams: nematodes, flukes
 Blood samples: copper, or as deemed necessary

Calves
 Weigh
 Tag corrections
 Spray body for flies
 Body condition score
 Vaccinate: 8-Way Clostridial
 Fecal exams: nematodes, flukes
 Blood samples: copper
Bulls: Remove most; leave clean-up
Combine all cattle to one group

AUGUST

Continue clean-up breeding
Copper supplement in salt
Maintain electric fence (to control rotation)
Rotation grazing through pasture

SEPTEMBER

Continue clean-up breeding
Copper supplement in salt
Maintain electric fence (to control rotation)
Rotation grazing through pastures

26-27 Work cattle
Cows
 Weigh
 Tag corrections
 Spray for flies (remove fly tags)
 Body condition score
 Fecal exams: nematodes, flukes
 Blood samples: copper
 Pregnancy test (or in November)
 + grub treatment and panacur for worms
 Cull (reproduction, condition, age, lame, eyes)
Calves
 Weigh
 Tag corrections

Spray for flies (remove fly tags)

Body condition score

Vaccinate

7 or 8-Way

1/2 killed: IBR, PI3, BRSV, BVD

1/2 MLV: IBR, PI3, BRSV, BVD

Fecal exams: nematodes, flukes

Blood samples: copper, or as deemed necessary

Wean

Bulls: Remove from cows

Trich test

Vaccinate (those retaining)

8-Way Clostridial

MLV: IBR, PI3, BRSV, BVD

Vibrio in oil (5 cc)

Remove fly tags

OCTOBER

Cows: Graze pastures

Copper supplement in salt

10 calves: weigh

31 calves: weigh

Vaccinate: heifers for Brucellosis

All with MLV: IBR, PI3, BRSV, BVD

Grub/Lice treatment with pour-on

Bulls: Vaccinate with Vibrio in oil (5 cc)

Grub/Lice treatment with pour-on

NOVEMBER

Cows: Grub/Lice treatment with pour-on (at preg test)

Copper supplement in salt

DECEMBER

Copper supplement in salt

HERD HEALTH PROGRAM - SHEEP

I. Pre-Breeding Season

A. 6 weeks prior to season

1. Rams - (including teasers)

a. Conditioning - exercise

b. Feet - trim, treat for foot problems if needed

c. Genital tract - palpate testes, epididymitis, penis (pizzle rot)

d. Perform a breeding soundness exam

e. Fecal exams: nematodes, flukes

f. Blood samples: copper, chem panel, as deemed necessary

- B. 4 weeks prior to season:
 - 1. Ewes
 - a. Vaccinations - vibrio
(Enzootic abortion, Lepto, if indicated)
 - b. Fecal exams: nematodes, flukes
 - c. Blood samples: copper, chem panel, as deemed necessary

- II. Breeding Season
 - A. Monitor teasers and stud rams for libido related activity
 - B. Monitor repeat cycles (> 50% pregnancy/cycle)

- III. Late Term Pregnancy (4-6 wks prior to lambing)
 - A. Vaccinations
 - 1. Clostridium perfringens C & D
 - 2. Caseous lymphadenitis DT
 - 3. Clostridium tetani (if indicated)
 - 4. Listeriosis, E. Coli, others (if indicated)
 - B. Moderate exercise
 - C. Increase energy level in ration to prevent pregnancy toxemia
 - D. Fecal exams: nematodes, flukes (treat with anthelmintic)
 - E. Blood samples: copper, chem panel, as deemed necessary
 - F. Treat for lice & Keds
 - G. Crutch ewes

- IV. Parturition
 - A. Ewes:
 - 1. Follow common sense sanitation procedures, check udder
 - b. Lambs
 - 1. I2 navel with tamed providone iodine
 - 2. Adequate colostrum consumption
 - 3. Vitamin E and Se for white muscle prevention

- V. Post Lambing
 - A. Ewes
 - 1. Fecal exams: nematodes, flukes (treat with anthelmintic prior to turning out on pasture)
 - 2. Blood samples: copper, chem panel, as deemed necessary
 - 3. Shear
 - B. Lambs
 - 1. Vaccinations:
 - a. Clostridium 8-Way or c. perfringens C & D
3-4 wk, boosted at 6-8 wk, 4 mo, yearly
 - b. Caseous Lymphadenitis DT, 4-6 wk, boosted at 4 mo, yearly
 - c. Contagious ecthyma (Soremouth, orf), 4-6 wk
 - 2. Treat with a coccidiostat
 - 3. Fecal exams (treat with anthelmintic prior to turning out on pasture)

VI. Weaning

A. Ewes

1. Fecal exams: nematodes, flukes (treat with anthelmintic as indicated)
2. Blood samples: copper, chem panel, as deemed necessary

B. Lambs

1. Fecal exams: nematodes, flukes (treat with anthelmintic as indicated)
2. Blood samples: copper, chem panel, as deemed necessary
3. Vaccinations
 - a. Clostridium 8-Way
 - b. Others as needed
4. Coccidiostat

VII. Purchased Sheep

A. Isolate 30 days

1. Fecal exams: nematodes, flukes (treat with anthelmintic)
2. Blood samples: copper, chem panel, as deemed necessary
3. Watch for
 - a. Foot Rot
 - b. Other clinical signs of disease

B. Vaccinations

1. Clostridium 8-Way
2. Vibrio
3. Caseous Lymphadenitis DT
4. Contagious ecthyma, others as needed

HERD HEALTH - SWINE

I. Pre-Gestation Period

A. Gilt selection

1. Select gilts 5 to 6 months old weighing 220 to 240 lb (100 to 110 kg)
2. Select gilts with at least 12 well-spaced, prominent nipples from sows that:
 - a. Have the highest breeding value sow productivity
 - b. Are conformationally sound
 - c. Have maternal genetics

B. Boar selection

1. Select boars 5 to 6 months old weighing 240 to 260 (109 to 118 kg)
2. Select on the basis of
 - a. Average daily gain
 - b. Feed/Gain ratio (F/G)
 - c. Conformation
 - d. Lean gain

C. Isolation/acclimatization to new breeding stock

1. Isolation
 - a. All purchased animals should be isolated for a minimum of 21 to 30 days

- b. Retest for brucellosis, pseudorabies virus (PRV), and others if indicated
 - c. Medicated for ileitis prevention
 - 2. Acclimatization
 - a. Begin after animals have been retested during isolation
 - b. Feed back manure, mummies, and placentas from sow herd
 - c. Expose boars and gilts to cull gilts or sows
 - d. Test mate boars to one or more gilts
 - e. Vaccinate as in the main herd (see below)
 - f. Treat for external and internal parasites
- D. Immunization
 - 1. Vaccinate for parvo virus, leptospirosis (5 or 6-Way), and erysipelas
 - 2. Other vaccinations as indicated by veterinarians
- E. Nutrition
 - 1. Boars, developing gilts
 - a. Protein: 15 to 16 percent
 - b. Calcium: 0.9 percent
 - c. Phosphorus: 0.8 percent
 - d. Feed intake: 4 to 6 lb (2 to 3 kg)

II. Breeding Period

- A. Move gilts to a new location and provide boar contact to stimulate estrus or use a vasectomized boar
- B. Flush gilts by increasing energy intake to 6 to 9 lbs/day (3 to 4 kg/day)
- C. Breed during second or third estrus or after 42-hour isolation/acclimatization
- D. Boars should be 8 to 9 months old
- E. Use 1 boar for each 5 females to be bred in a 3-week period
- F. Double-mate at 12 and 24 hours after onset of estrus using different boars
- G. For hand-mating, provide 1 boar to 17.5 females
- H. Reduce daily feed intake of gilt or sow immediately after breeding

III. Gestation Period

- A. Nutrition
 - 1. Maintain reduced feed intake until last trimester of pregnancy; gilts should gain between 70 and 100 lbs (35 to 50 kg), sows between 50 and 60 lb (22.7 and 27 kg) during gestation; feed sows to condition during first trimester.
 - 2. Ration
 - a. Gilt
 - 1. Protein: 14 percent, 250 g/day
 - 2. Calcium: 84 percent, 16.0 g/day
 - 3. Phosphorus: 70 percent, 13 g/day
 - 4. Feed intake: 4 lb (1.8 kg)/day
 - b. Sow
 - 1. Protein: 12 to 14 percent, 250 g/day
 - 2. Calcium: 80 percent, 15 g/day

- 3. Phosphorus: 65 percent, 13 g/day
- 4. Feed intake: 4.5 lb (2 to 3 kg)/day
- 3. Increase feed to 3 kg in last trimester of pregnancy
- 4. Heavy-milking white sows may require more feed
- 5. Increase energy intake during winter and outside housing
- B. Immunization
 - 1. Clostridium perfringens type C toxoid, when necessary, 5 weeks and 3 weeks before farrowing
 - 2. Escherichia coli bacterin, when necessary, 5 weeks and 3 weeks before farrowing, or live oral milk vaccine.
 - 3. Transmissible gastroenteritis (TGE) vaccine if indicated
 - a. Injectable, 5 weeks and 3 weeks before farrowing
 - b. Oral, 5 weeks, 3 weeks, and 1 week before farrowing
 - 4. Atrophic rhinitis bacterin, when necessary, 5 weeks and 3 weeks before farrowing
 - 5. Erysipelas vaccine 3 weeks before farrowing, if not done before breeding
- C. Retreat for mange 1 week before farrowing (unless mange free)
- D. Deworm 7 to 10 days before farrowing if needed. (Biannual fecal examinations of breeding herd will determine need and anthelmintic.) Don't deworm with dichlorvos and treat with insecticide for mange simultaneously.
- E. Antibiotics are usually not added to gestation ration unless indicated.
- F. House animals on a clean, dry surface to prevent MMA (mastitis, metritis, agalactia syndrome).

IV. Farrowing Period: Gilts or Sows

- A. Thoroughly clean and disinfect the farrowing house.
- B. Wash and use mild disinfectant on gilts and sows to rid them of parasite eggs and dirt before placement in farrowing crate or stall.
- C. Feed a diet that will reduce constipation; use 7 lb (3.2 kg) potassium chloride or 20 lb (9 kg) DynaMate per ton of feed or top dress laxative for individual animals.
- D. Be present at farrowing to increase the number of pigs saved.
- E. Induce farrowing if breeding date is known.
- F. Treat sow early that show evidence of agalactia.
- G. Observe feed intake of sows closely; keep farrowing room temperatures below 80°F will help increase intake.
- H. Do not allow manure build-up in pen or behind sows in the crate.

V. Farrowing to Weaning

- A. Environment
 - 1. Supply adequate heat with lamp or mats to avoid chilling at birth
 - 2. Farrowing boxes or hovers provide direct heat for the pig and allow a lower farrowing house temperature for the sow
 - 3. Split suckle pigs
 - 4. Temperature for pig sleeping area should be 90° to 95°F
- B. Administer a fat supplement to reduce weak pig death loss

- C. Process pigs 12 to 24 hours after birth
 - 1. Clip needle teeth
 - 2. Dock tails
 - 3. Notch ear to identify litter and week
 - 4. Castrate
 - 5. Inject 200 mg iron into the neck muscle
 - 6. Treat with antibiotic if necessary to control diarrhea or navel ill; use lab sensitivity results to determine best antibiotic
 - 7. Identify litters with genetic defects
- D. If several sows are farrowing simultaneously, cross foster to equalize piglet and litter size
- E. Immunizations
 - 1. Based on disease history consult the veterinarians, E. Coli, etc
 - 2. Administer atrophic rhinitis bacterin if needed
- F. Nutrition
 - 1. Provide water as a creep from day 1
 - 2. Palatable creep feed provided at 14 days; feed small amounts daily

VI. Weaning Period

- A. Environment
 - 1. Place pigs in clean, warm (85oF) nursery, preferable with woven wire flooring or impervious perforated flooring
 - 2. All-in/all-out farrowing and nursery will aid considerable in controlling disease
- B. Nutrition
 - 1. Recommendation: mixed-sex feeding
 - a. 10 to 15 lb (5 to 7 kg)
 - 1. Protein: 2.2 percent
 - 2. Lysine: 1.4 percent
 - 3. Calcium: .90 percent
 - 4. Phosphorus: .8 percent
 - b. 15 to 25 lb (7 to 11 kg)
 - 1. Protein: 22 percent
 - 2. Lysine: 1.25 percent
 - 3. Calcium: .90 percent
 - 4. Phosphorus: .80 percent
 - c. 25 to 50 lb (11 to 24 kg)
 - 1. Protein: 20 percent
 - 2. Lysine: 1.10 percent
 - 3. Calcium: .90 percent
 - 4. Phosphorus: .80 percent
 - 2. Diets need to be kept fresh, and pigs should be fed once or twice a day
 - 3. Add antibiotics to the ration
- C. Immunization (herd-specific)
 - 1. Atrophic rhinitis bacterin, when needed; second infection at 28 days
 - 2. Erysipelas vaccination if necessary at 8 weeks

3. Hemophilus pleuropneumoniae bacterin, when necessary, at 8 to 12 weeks
 4. Streptococcus suis vaccination if necessary
- D. Parasites
1. Treat for lice and mange if needed
 2. Fecal samples should be collected at 16 weeks of age from a group of untreated pigs for determined of infections
 3. Deworm at 8 to 12 weeks when needed
- E. Monitor for postweaning diarrhea
1. Fecal samples to make a definitive diagnosis and treat accordingly
 2. Medicate water if needed
- F. Postmortem examination of pigs if disease outbreak occurs

VII. Growing-Finishing Period

- A. Nutrition
1. Recommendations: mixed-sex feeding
 - a. 50 to 75 lb (23 to 34 kg)
 1. Protein: 18 percent
 2. Lysine: .90 percent
 3. Calcium: .85 percent
 4. Phosphorus: .75 percent
 - b. 75 to 125 lb (34 to 57 kg)
 1. Protein: 16 percent
 2. Lysine: .80 percent
 3. Calcium: .80 percent
 4. Phosphorus: .70 percent
 - c. 125 to 240 lb (57 to 109 kg)
 1. Protein: 14 percent
 2. Lysine: .65 percent
 3. Calcium: .70 percent
 4. Phosphorus: .60 percent
 2. Provide adequate feeder and water space
 3. Observe feed intake and adjust feeders to control waste
 4. Remove therapeutic antibiotics from diet at 50 to 75 lb (23 to 34 kg) of body weight; use growth promotant from 75 to 240 lb (34 to 109 kg)
- B. Immunization (herd-specific)
1. Second Hemophilus pleuropneumoniae bacterin, if needed, at 10 weeks and 14 weeks of age
 2. Other vaccinations as needed
- C. Parasites
1. Monitor fecal examinations results twice a year and treat accordingly
 2. Inject or spray for lice and mange if needed
- D. Check 30 pigs at slaughter at least twice a year for monitoring incidence of respiratory, enteric, skin, and joint problems
- E. Conduct post-mortem examinations of pigs