

Artificial Insemination of Goats

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Estill's qualifications - I like goats!



Seminar Outline

- Why AI?
- Synchronization of estrus
- Semen handling
- Semen storage and shipping
- AI equipment
- AI techniques
- Questions



Why AI your does?

- ❑ Eliminate or reduce the cost and bother of maintaining bucks.
- ❑ Increase the rate of genetic improvement through maximal use of superior sires.
- ❑ Increase the number of does to which a buck could be bred.
- ❑ Reduced disease transmission



- ❑ Estrous synchronization allows several does to be bred the same day.
- ❑ Easy transport of genetics.

Disadvantages of AI

- ❑ Costs for equipment and liquid nitrogen
 - ❑ Increased labor for estrus detection and insemination
 - ❑ Lack of standard protocols for packaging and quality control
 - ❑ Potential for spread of undesirable traits
-

Goat semen costs

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AI in subject\)](#)

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ALL AMERICAN A.I.

America's pioneers in the artificial insemination of goats.

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- [EMAIL US:](#) Please place the word "AI" in subject line.

NUBIAN SIRE LIST

COPPER-HILL GRAND SLAM *B	N0864477	\$20 .EA
S: Crown*Point Gabriel's Example *B		
D: Crown Point ATG Gidget		
DD: Gabriel was GCH Nat's '90 & '91		
4-EVER-R'S BLAISENAY	N0897349	\$20 .EA
S: C/F BLAISE ++*B		
D: 4-Ever-R's Red sunday Vanna		
1st CHOICE COMMAND PERFORMANCE		\$15 or 5/\$65
S: GCHCrown Hill TGS Sky Commaand		
D: GCH Goats R Us Proudly Pearl *M		
1st CHOICE MIDNIGHT RIDER		\$15 or 5/\$65
S: GCH++*B E-B Brown's XJB Trailblaizer		
D: GCH Goats R Us Proudly Pearl *M		
++*B CADILLAC PIEJAR 7-06 FS90		\$35 or 5/150
S: ++*B Cadillac Geronimo		
D: Cadillac Pieja 4*M		
*B Capricorn Three Mega Buck		\$15 or 5/\$65
*B CAR AVELLE'S EXACTA		\$30 or 5/\$125
S: GCH++*B Frosty Marvin		
D: CH Warpaint Acres Orion's Carla 3*M		
CARAVILLE'S JACK FROST		\$30 or 5/\$125
S: GCH++*B Frosty Marvin		
D: GCH Velvet acres Maiya 4*M		
FS: 90 2-10 2960		
CEDARDSAGE ETERNAL CONQUEST		\$20 or 5/\$80
S: ++*B Silver Thistle Jelly Conquest		
D: Cedarsage Everlasting 8*M		
*B CEDARSAGE GOLDEN BURE		\$20 or 5/\$80

So you want to try AI!

Doe selection

- Good health
- BCS 2.5-3
- Be on improved nutrition for 2-5 weeks prebreeding
- Disease free
- Good mothers



AI success depends on:

- ❑ Fresh vs. frozen semen
- ❑ Number and timing of inseminations
- ❑ Insemination method
- ❑ Quality and quantity of semen
- ❑ Semen handling practices
- ❑ Management of animals to be inseminated



Goats can be bred based on signs of heat



- A buck does it best!
 - Presence or odor of buck causes most does to display heat signs
 - Vulva may be swollen, reddened, and moist during heat
 - Tail flagging
 - Restlessness, vocalization, increased urination
-

Vaginal mucus changes during heat (need to use a speculum to see this)

- ❑ At beginning of heat, very little mucus is present
 - ❑ As heat progresses, mucus is transparent and found on floor of vagina
 - ❑ Towards the end of heat the mucus is cloudy- **best time to breed**
 - ❑ At the end of heat the mucus is cheesy and white
-

Mucus turns cloudy at optimal insemination time

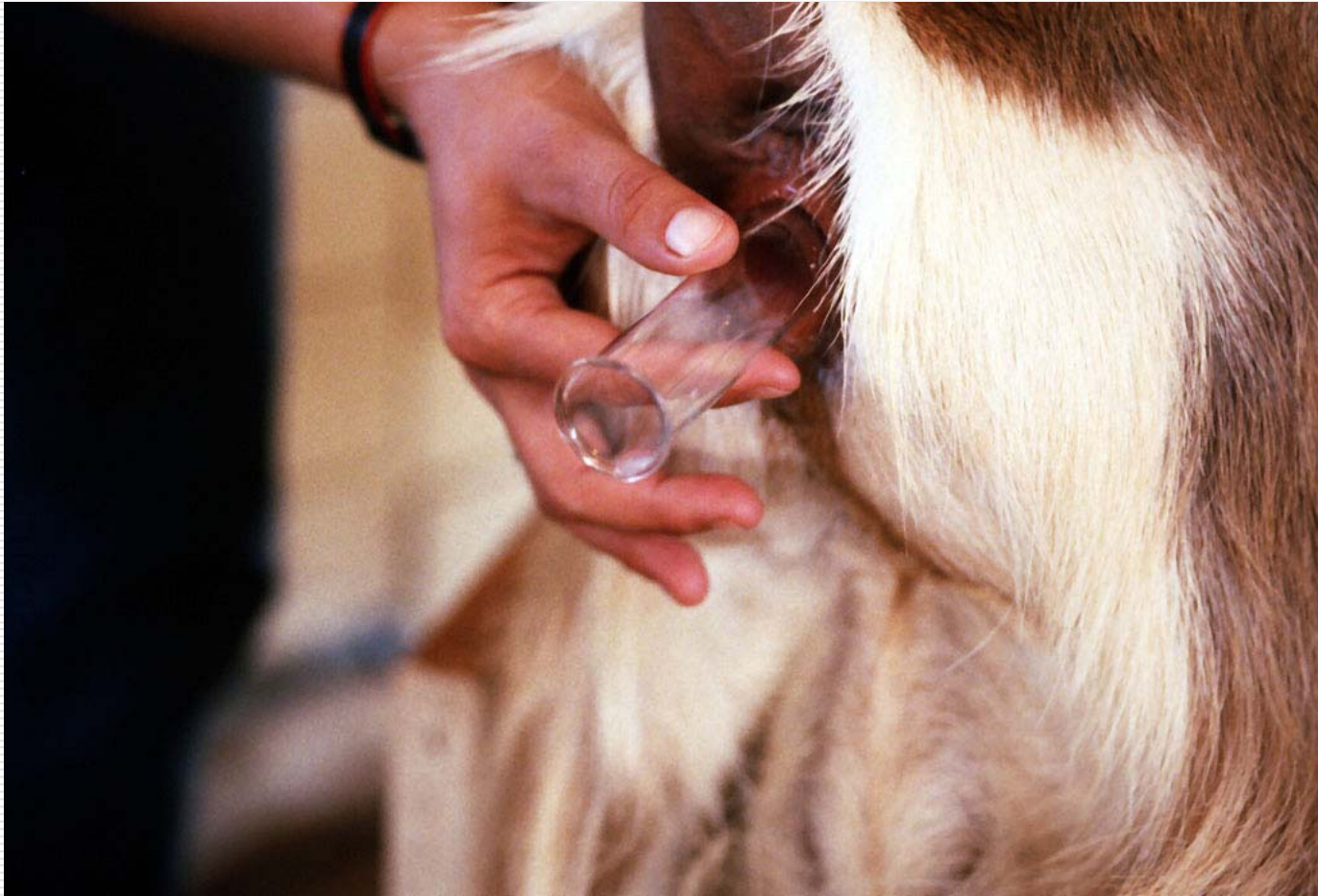


Photo courtesy Dr. Sherrill Fleming

Estrus synchronization

- ❑ Progestogen implants work better than PGF-based programs
 - ❑ Inject 200-500 IU eCG when sponge or CIDR is removed
 - ❑ Evaluate semen before use
 - ❑ Does ovulate around the end of standing estrus
 - ❑ Examination of cervical mucus is best guide to AI timing
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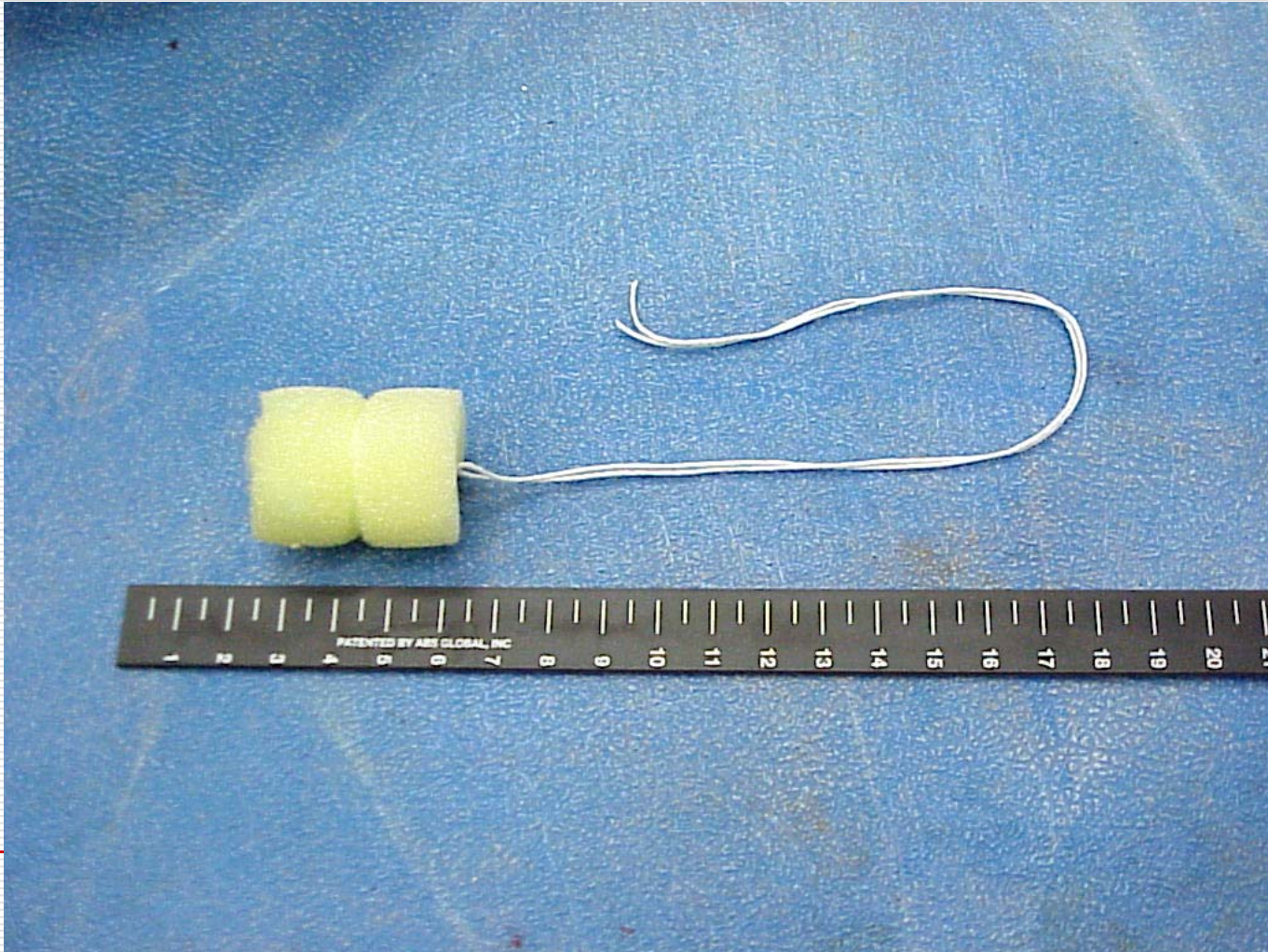


Inserting CIDR

Trimming CIDR tail



Vaginal sponge



AI timing

- Mucus changes from clear and thin to cloudy and stringy late in mid- to late-heat.
 - AI should be just before or when the mucus turns cloudy-usually 12-15 h after start of heat.
 - Breed again if still in heat 12 h later
 - TAI- best with fresh semen
 - 50-55 h after CIDR removal
-

Timed insemination

- ❑ 50-55 h after removal of progestin
- ❑ Fresh semen dose - 150 million pms
- ❑ Frozen semen dose - 200 million pms
- ❑ Conception rates = 50-85%



Cooled Shipped Semen

- Keep for several days?
- Semen survival
- Conception rates
- Ease of handling
- Common in some countries/areas



Frozen Semen

Tanks

■ “Shipper tanks”

Wet

Dry

Length of “hold”

■ “Storage tanks”

Liquid nitrogen

Size

Length of hold (rating)





Dewar (Tank) Considerations

- Cost
- Size
- Holding time
- Service
- Measure LN2 weekly



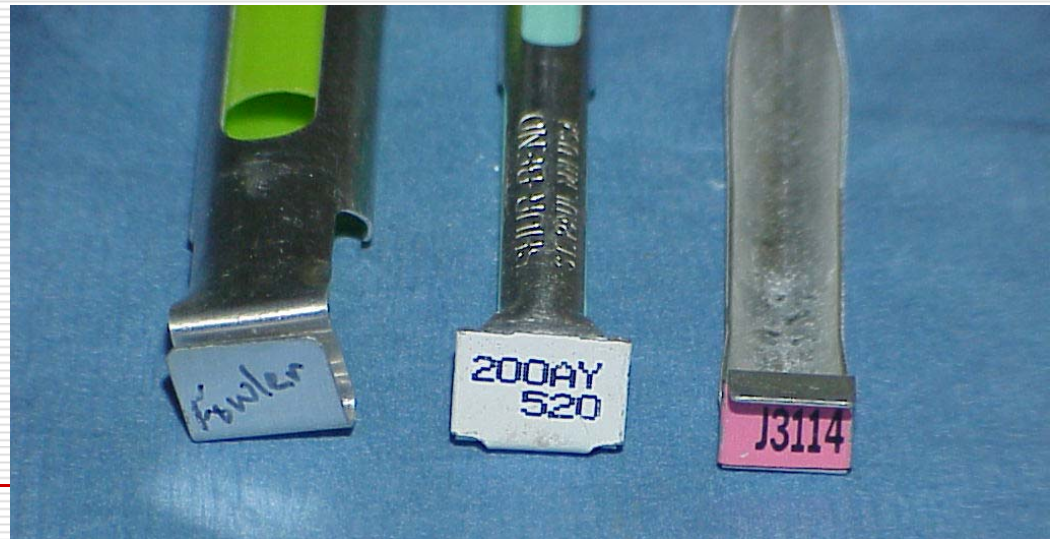
Store dewar off concrete



Handling Frozen Semen

RECORDS

- Which tank?
- Which canister?
- Which cane?
- Markings
 - ID
 - codes
 - Name
 - Etc.



Identify cane with desired straw



Lift canister only enough to read canes



Getting the straw out

- Tweezers
- Forceps
- Keep in neck of tank
 - Out for < 10 seconds
 - If in doubt, put it back
 - Take your time
 - Don't panic/rush/recheck the record
- You need at least 3 hands to do properly!



Lift straw from cane and quickly replace
cane



Thawing the straw

- From tank to thaw water ASAP
 - Put thaw cup next to tank
 - Make sure it is correct temp
 - Out of sun
 - From temperature extremes
- Thaw 30-45 seconds minimum
 - Can hold at thaw temp for short period of time, longer than 15 minutes, reduce temp to 90⁰ F
 - Best if used right away



Place into thaw bath



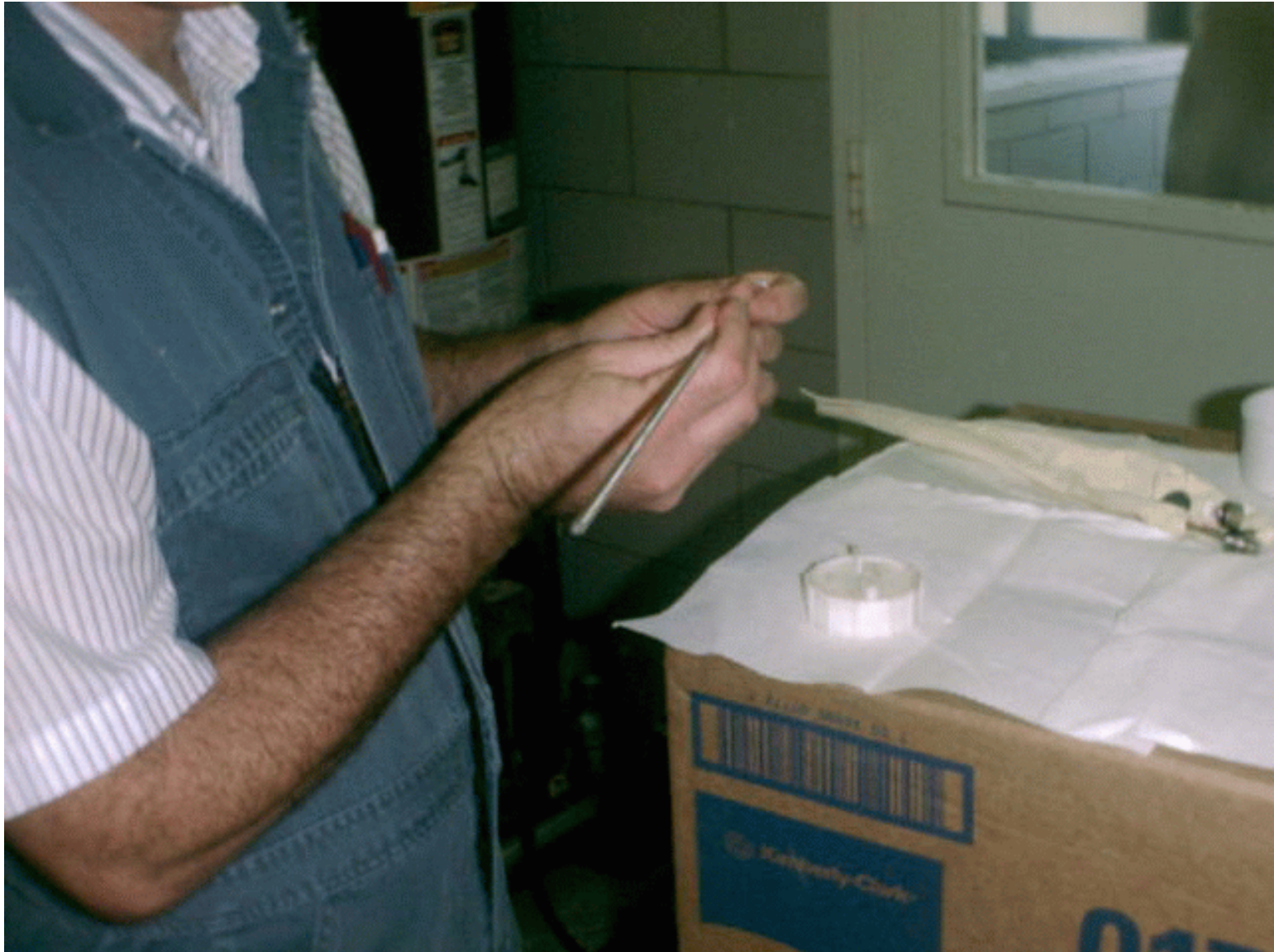
Straw Handling

- Remove straw from thaw water
 - Wipe dry
 - Shake air bubble to end of straw that you are going to cut off
 - Cut end of straw off with straw cutter or sharp scissors
 - Load into AI gun
 - Warmed, clean and dry
-

Cut end of straw

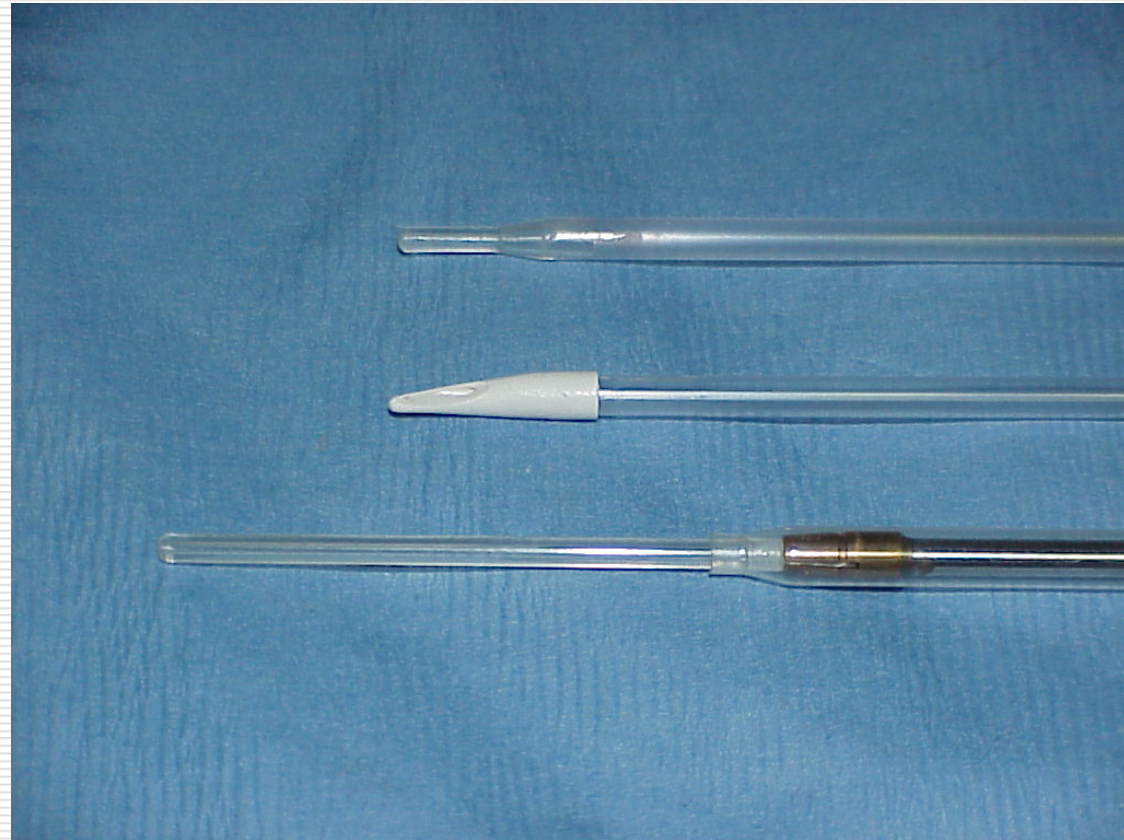


Place straw into AI gun



AI guns

- Cassou gun
- "needle" gun
- Hoegger gun
- ET gun
- others



Preparing the doe for AI

- Restraint
- Preparation: clean perineum
 - Soap and water
 - Disinfectants: **NOT** unless you can rinse off completely
 - Just water
- Dry thoroughly



Positioning doe in a cradle



Goat AI kit



Goat AI – equipment list

- Liquid nitrogen tank
- Speculum (25 x 175 mm for doelings or 25 x 200 mm for does)
- A.I. light
- Straw tweezers
- Sterile lubricant (non-spermicidal)
- Insemination gun (for straws)
- Breeding stand or facilities to restrain the doe
- Thaw box
- Paper towels
- Straw cutter
- Thermometer



Lube on speculum

- ❑ Non spermicidal!!!
- ❑ Enough for the job, but not too much
 - On vulvar lips or on speculum
 - May want to warm lube
 - Won't block view of the cervix



Use non-spermacidal lube



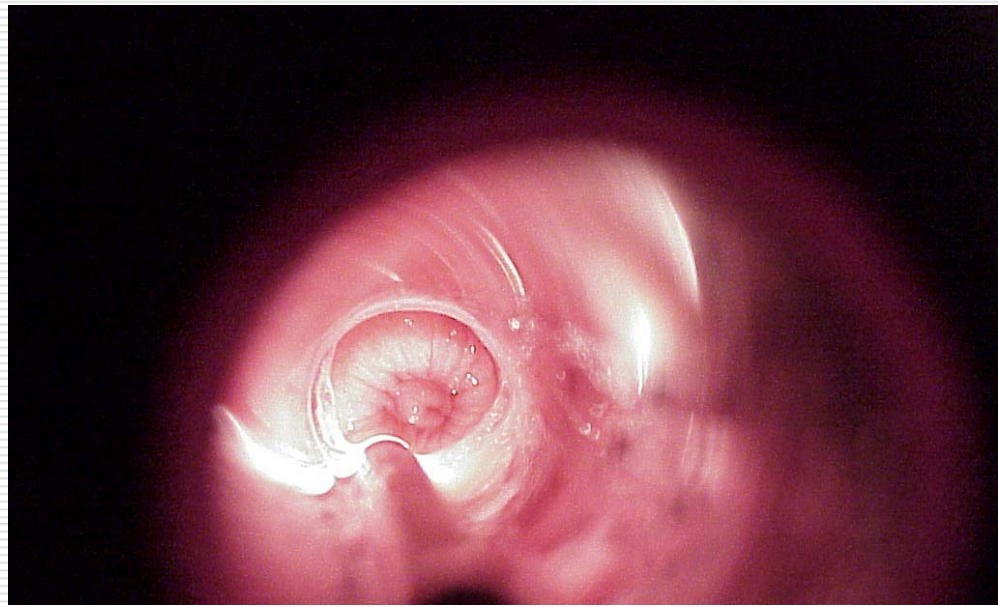
Insert vaginal speculum



Insert light into speculum



- Visually locate the cervix.
 - cervix should have a red-purple color and white mucus will be present if the doe is in heat and at the proper stage for insemination





Press speculum against cervix

Place AI pipette into cervix



Place AI pipette into cervix



AI technique

□ Vaginal insemination

- Generally poor conception rates
- Use 3 billion PMS/insemination

□ Cervical insemination

- Elevate rear legs in bale of hay
- Place lubed speculum into vagina
- With aid of a light, place pipette as far into cervix as possible
- Deposit semen in cervix
- MID 200 million PMS

Goat AI

- ❑ Insert the insemination gun into the speculum and thread it into the opening of the cervix.
 - ❑ Use a circular motion and slight pressure to work the insemination gun through the rings of the cervix.
 - ❑ Do not penetrate the cervix more than 1.5 inches.
 - ❑ Deposit the semen slowly by pushing the plunger forward.
-

Table 15.2 Kidding rates in relation to depth of cervical insemination in crossbred Angora does

<i>Depth of cervical insemination</i>	<i>Fresh diluted semen No. does kidded per inseminated (%)</i>	<i>Frozen-thawed semen No. does kidded per inseminated (%)</i>
up to 1 cm	37/88 (42.0%)	17/63 (27.0%)
1.0 to 3.0 cm	74/127 (58.3%)	39/85 (45.9%)
into uterus	56/81 (69.1%)	70/102 (68.6%)

S-L-O-W-L-Y inject semen



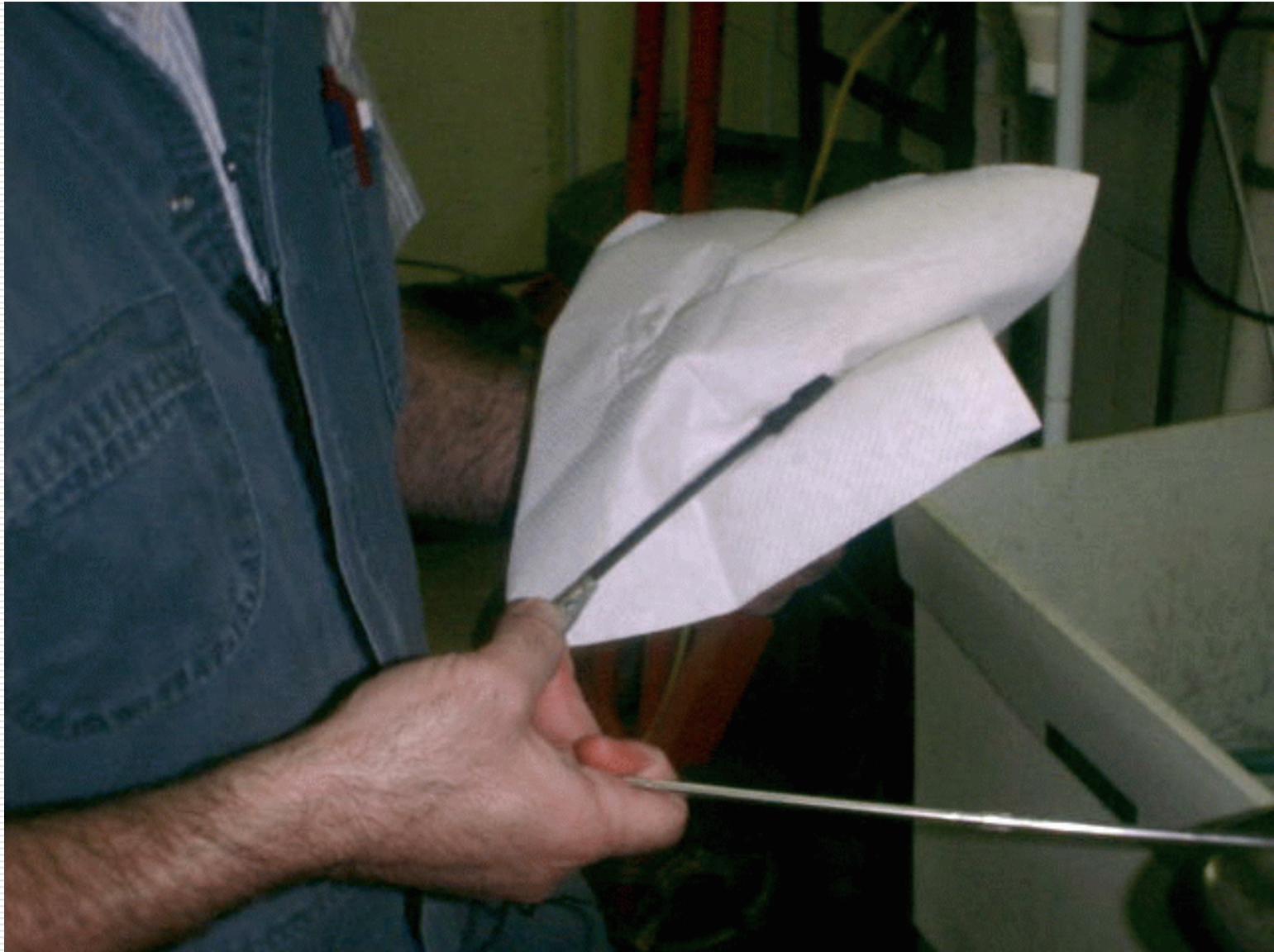
Withdraw speculum



How the equipment fits together



Clean equipment



Rinse, rinse, rinse



□ Deep intrauterine AI

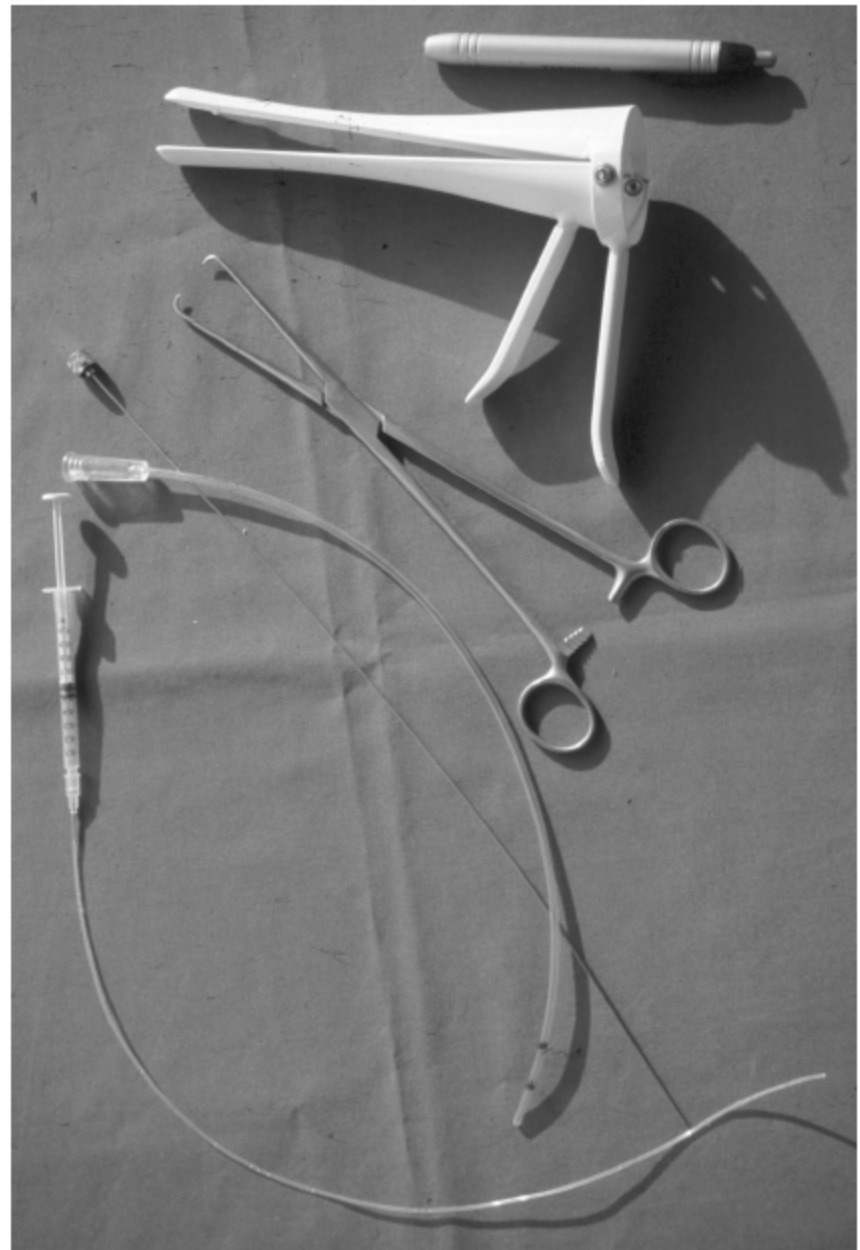


Figure 1. Equipment required for transcervical deep cornual insemination of goats: duckbill speculum and penlight, uterine tenaculum forceps, catheter and stylet, and thin polyethylene tube with a 1-mL syringe attached.

Laparoscopic insemination

- Visualize uterus so semen is placed directly into lumen
 - Held of feed and water for 24h
 - Does is sedated and placed on her back with head down
 - Laparoscope and insemination pipette are placed through separate openings in the abdomen
 - Place 20×10^6 PMS in both horns
-

Transcervical insemination



Next Spring

