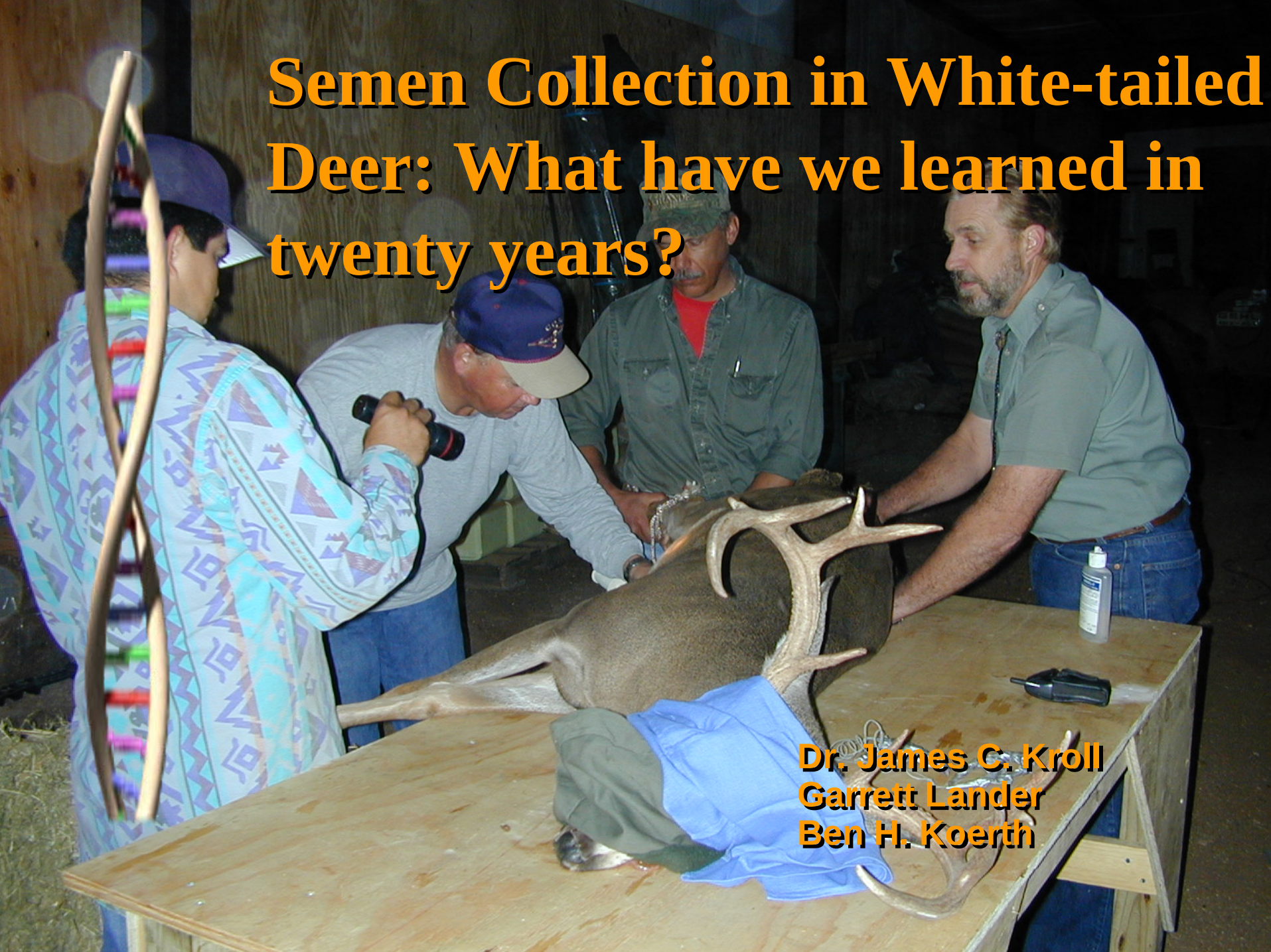


Semen Collection in White-tailed Deer: What have we learned in twenty years?

Dr. James C. Kroll
Garrett Lander
Ben H. Koerth

Why Collect Semen?

- ✓ Genetic conservation:
  - ✓ Wild deer
- ✓ Insurance.
- ✓ Extra income.





Why Purchase Semen?

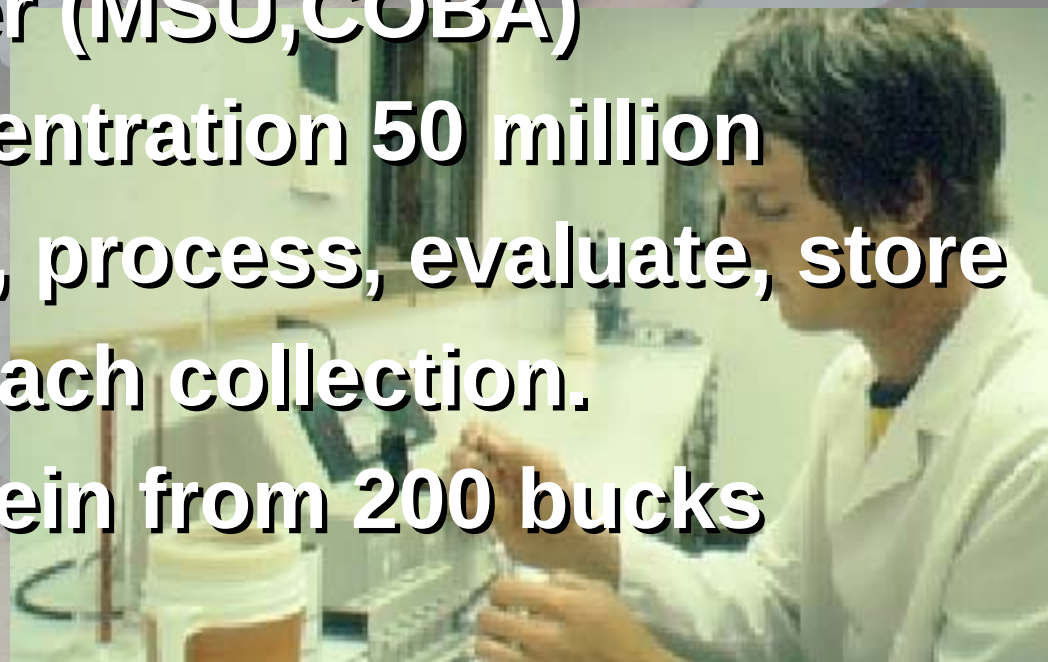
- ✓ Affordable access to the best bucks.
- ✓ Limitations from CWD, etc.
- ✓ Maintenance of hybrid vigor.

Semen Collection



Methodology?

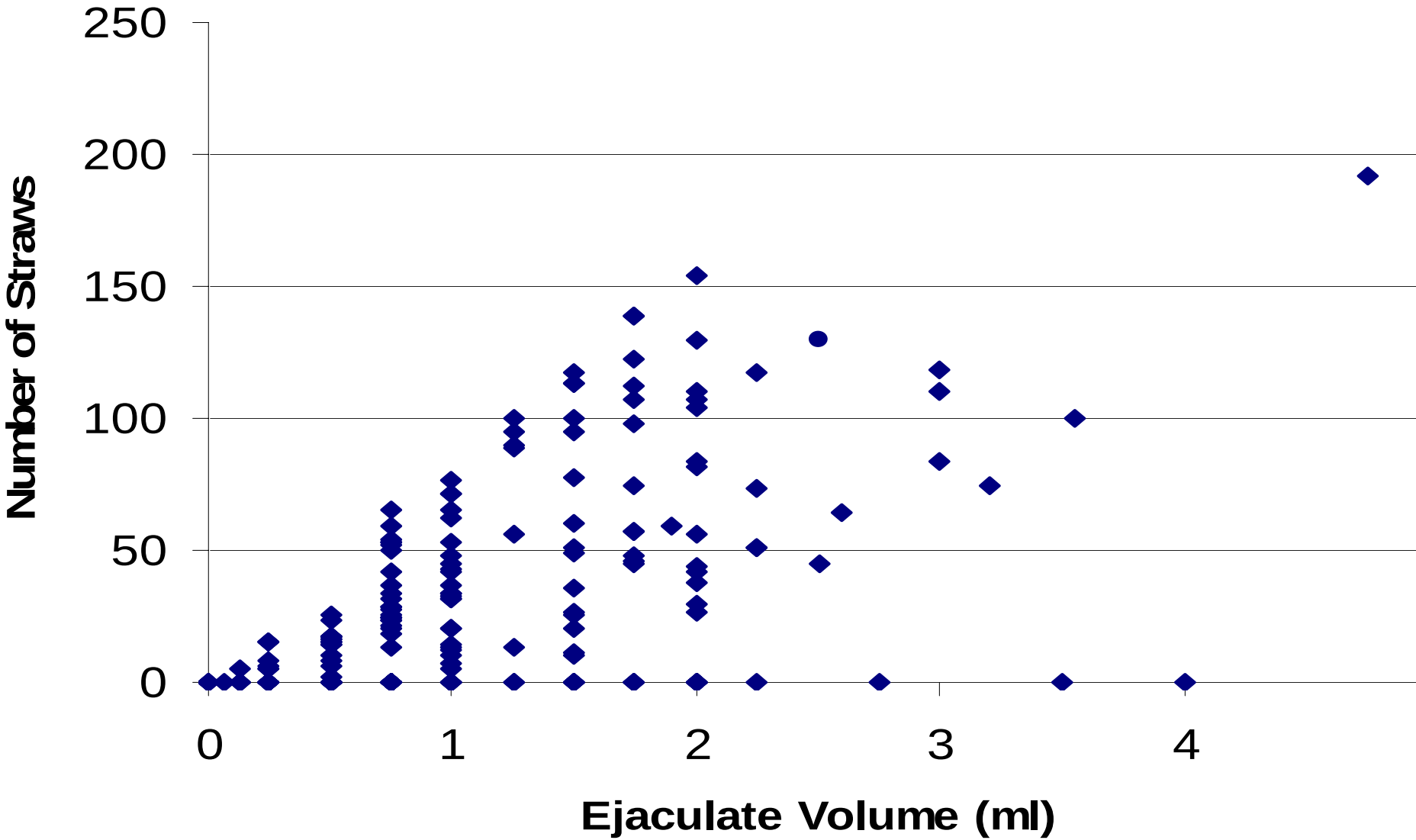
- ✓Single Source Collection Service: COBA Select Sires
- ✓Initial collections: 70 million sperm
- ✓Use TRIS extender (MSU,COBA)
- ✓Final sperm concentration 50 million
- ✓Collect, transport, process, evaluate, store
- ✓Same operators each collection.
- ✓Data reported herein from 200 bucks (368 total)



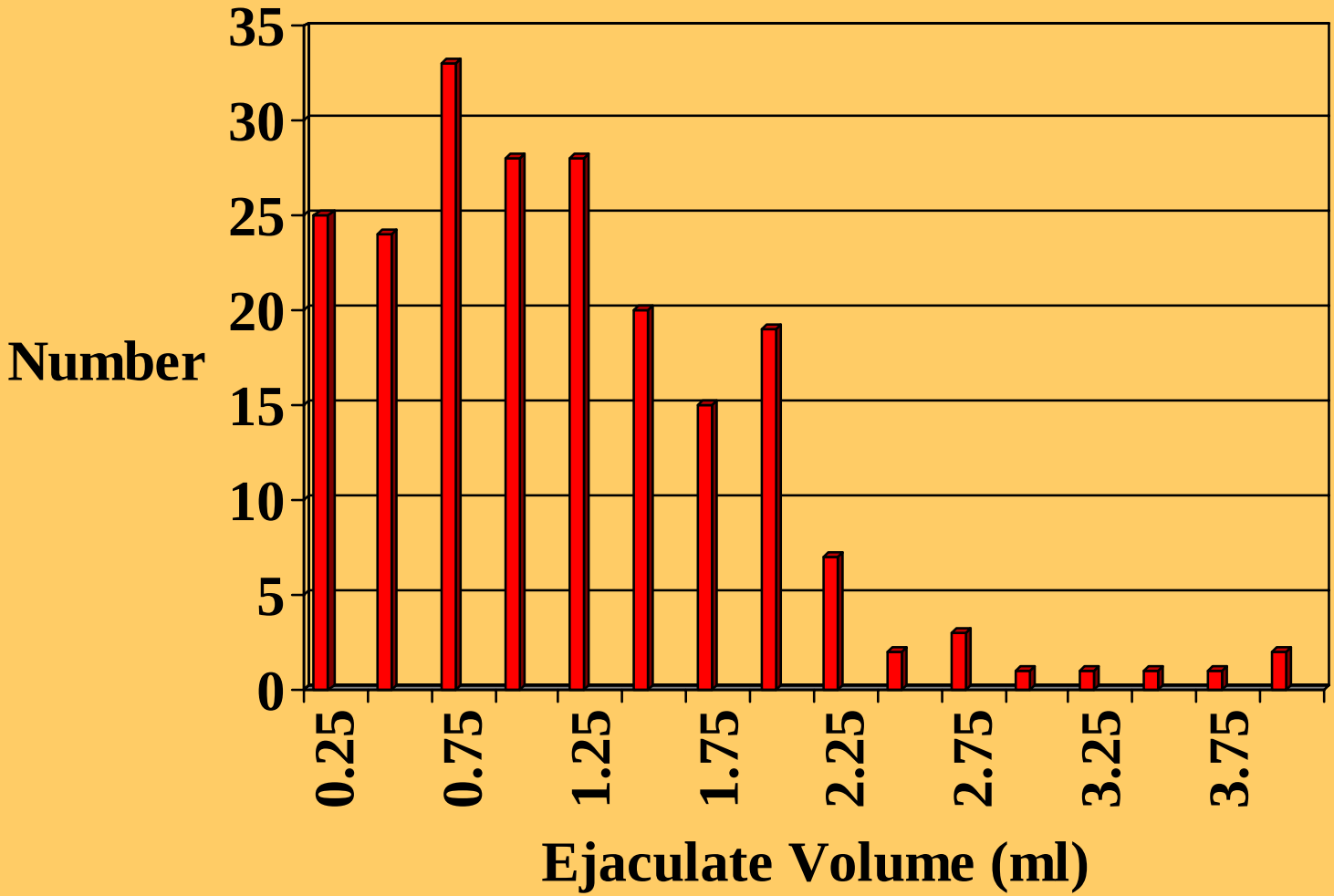
Age Distribution



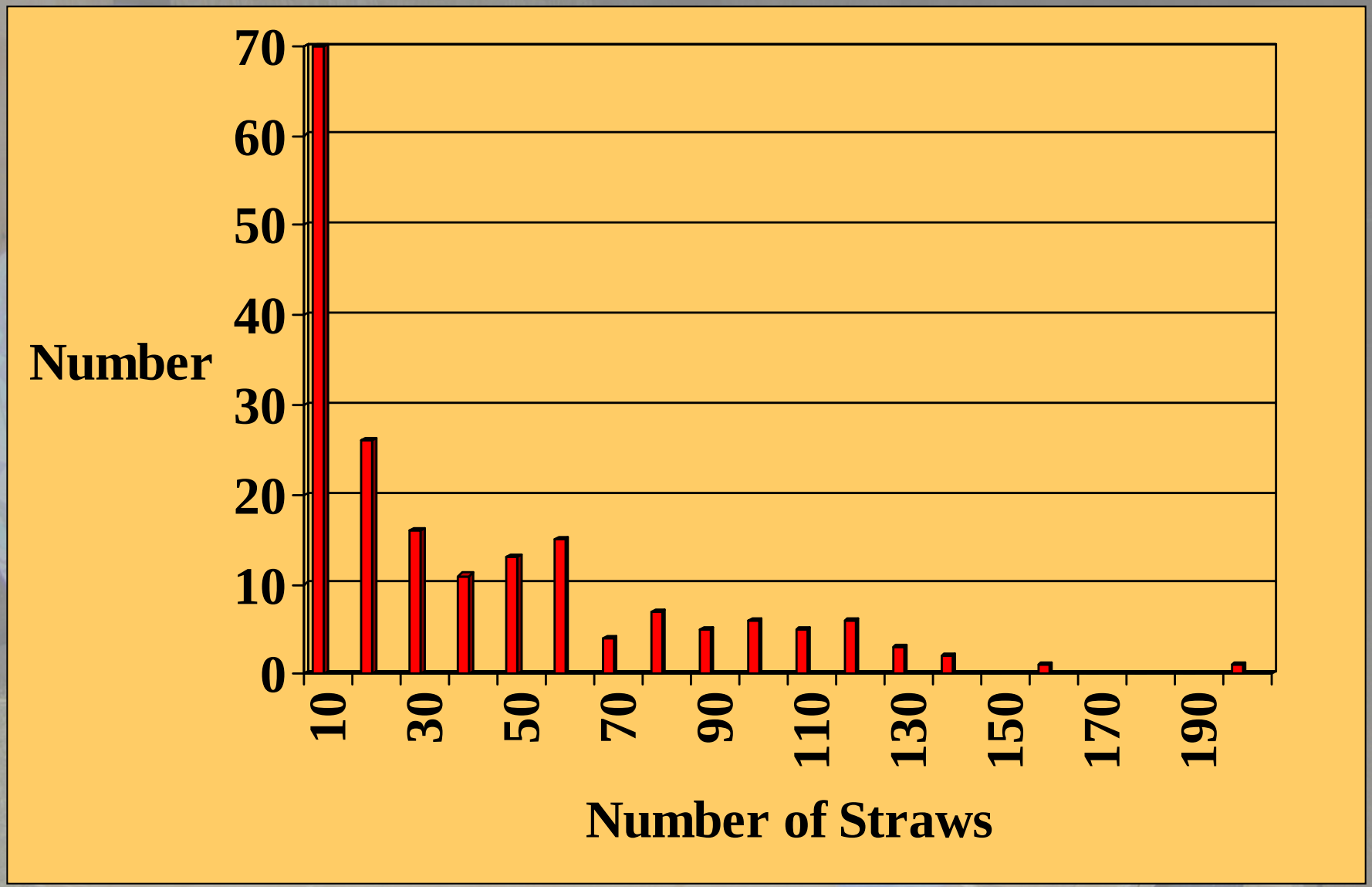
Ejaculate volume versus straws of semen



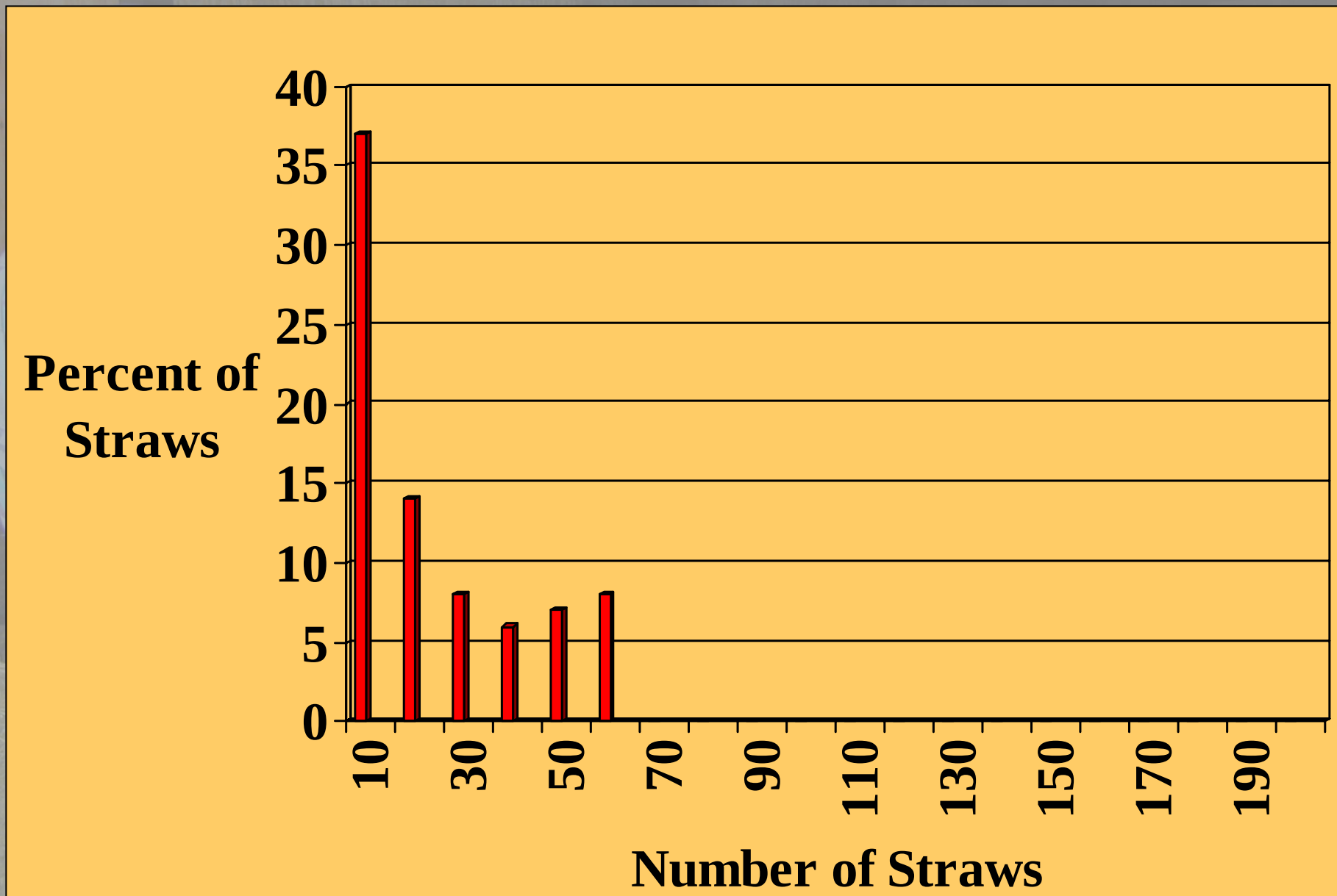
Distribution of Collection Volume



Distribution of Straws



Distribution of Straws

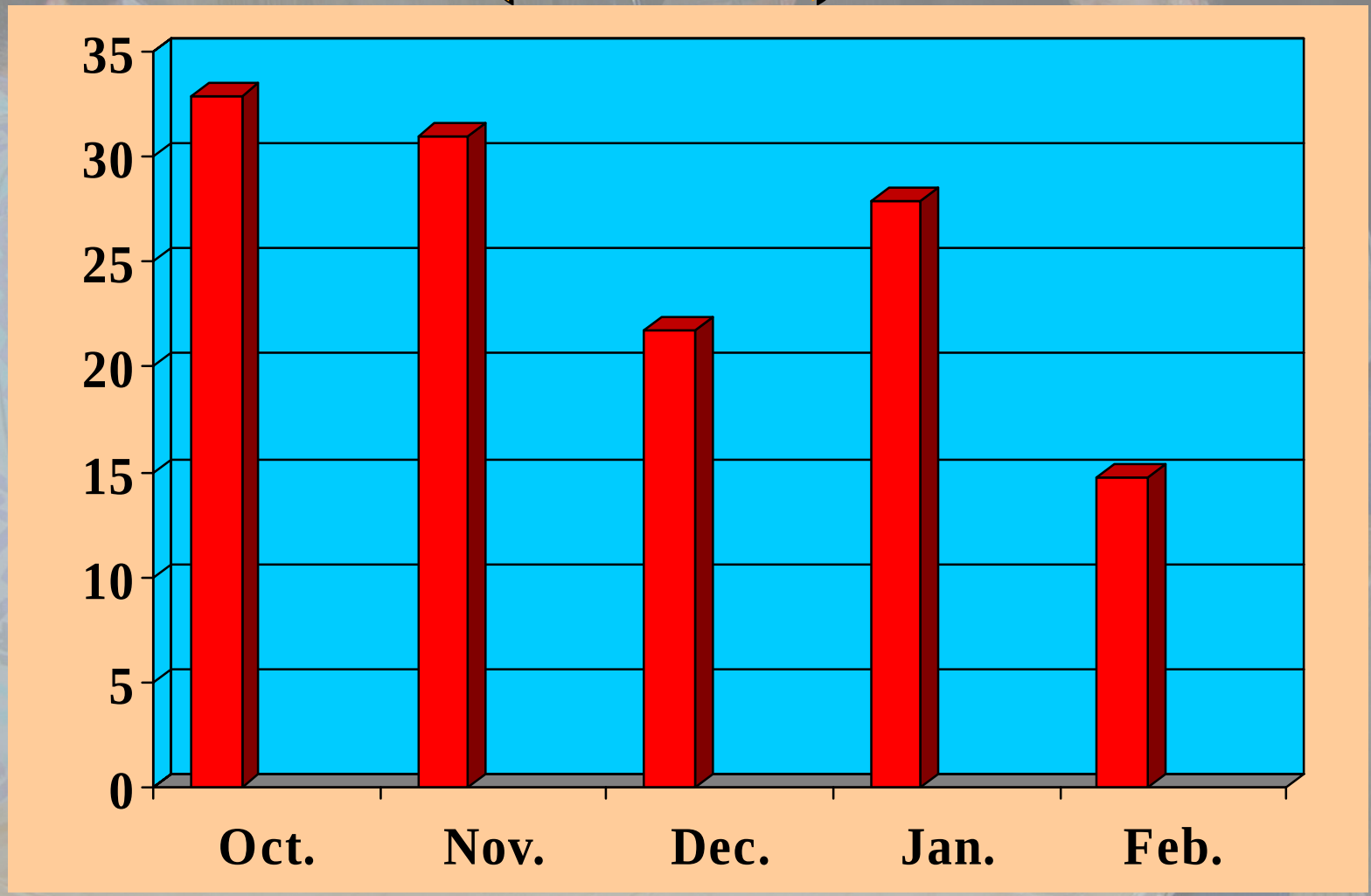




What affects semen production?

Time of Season

Semen Straws Per Collection (Month)

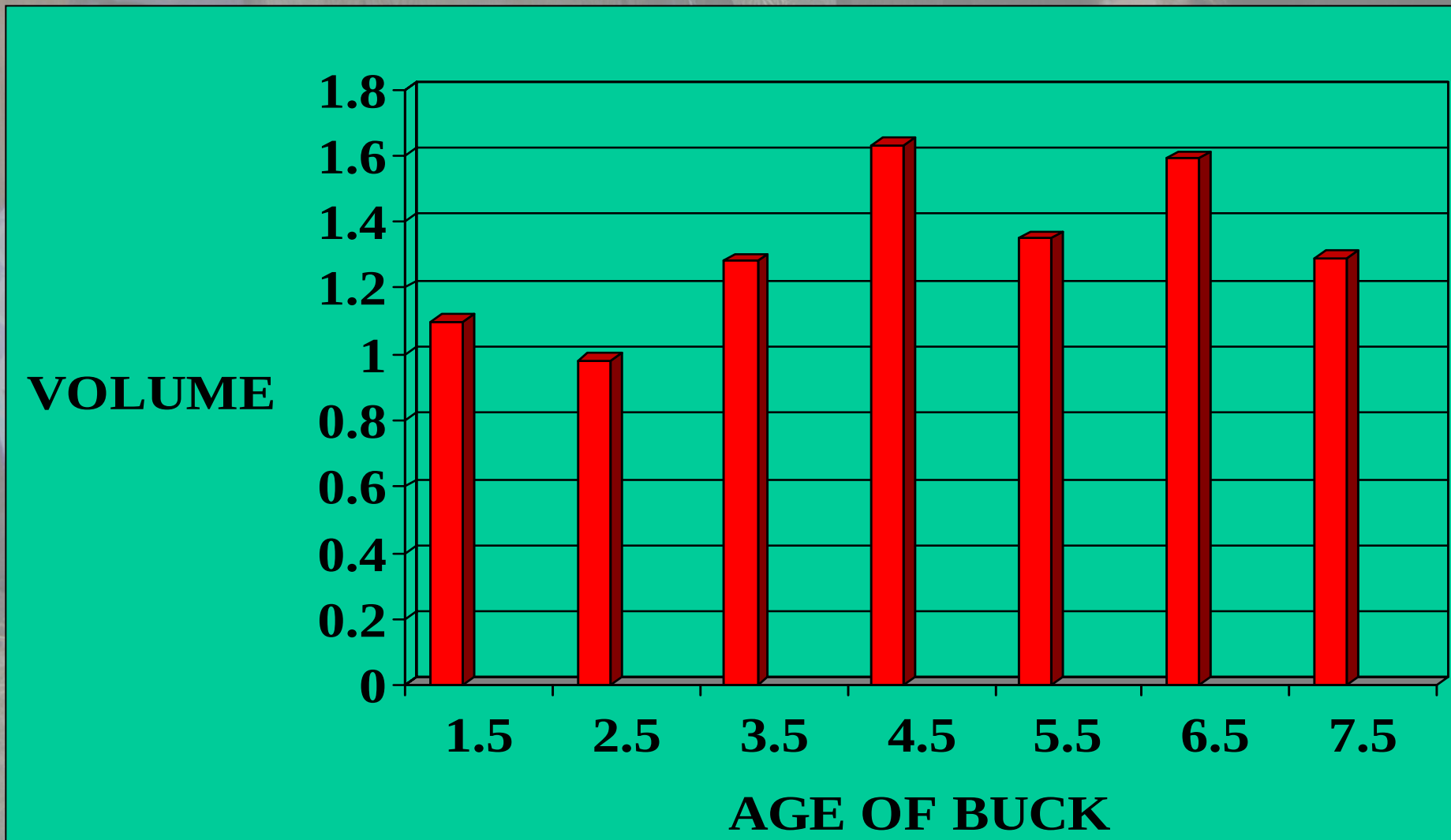




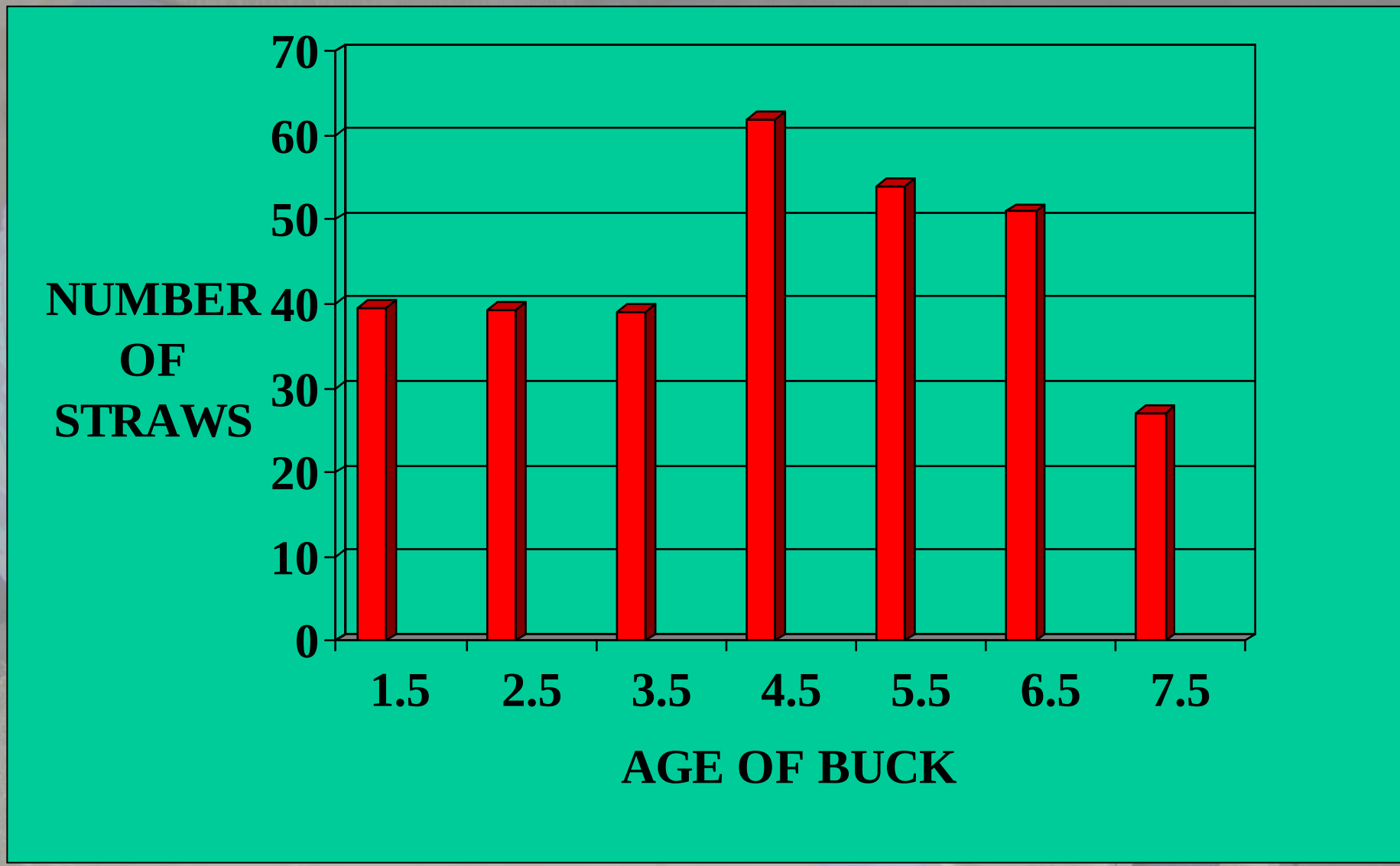
What affects semen production?

Age of Buck

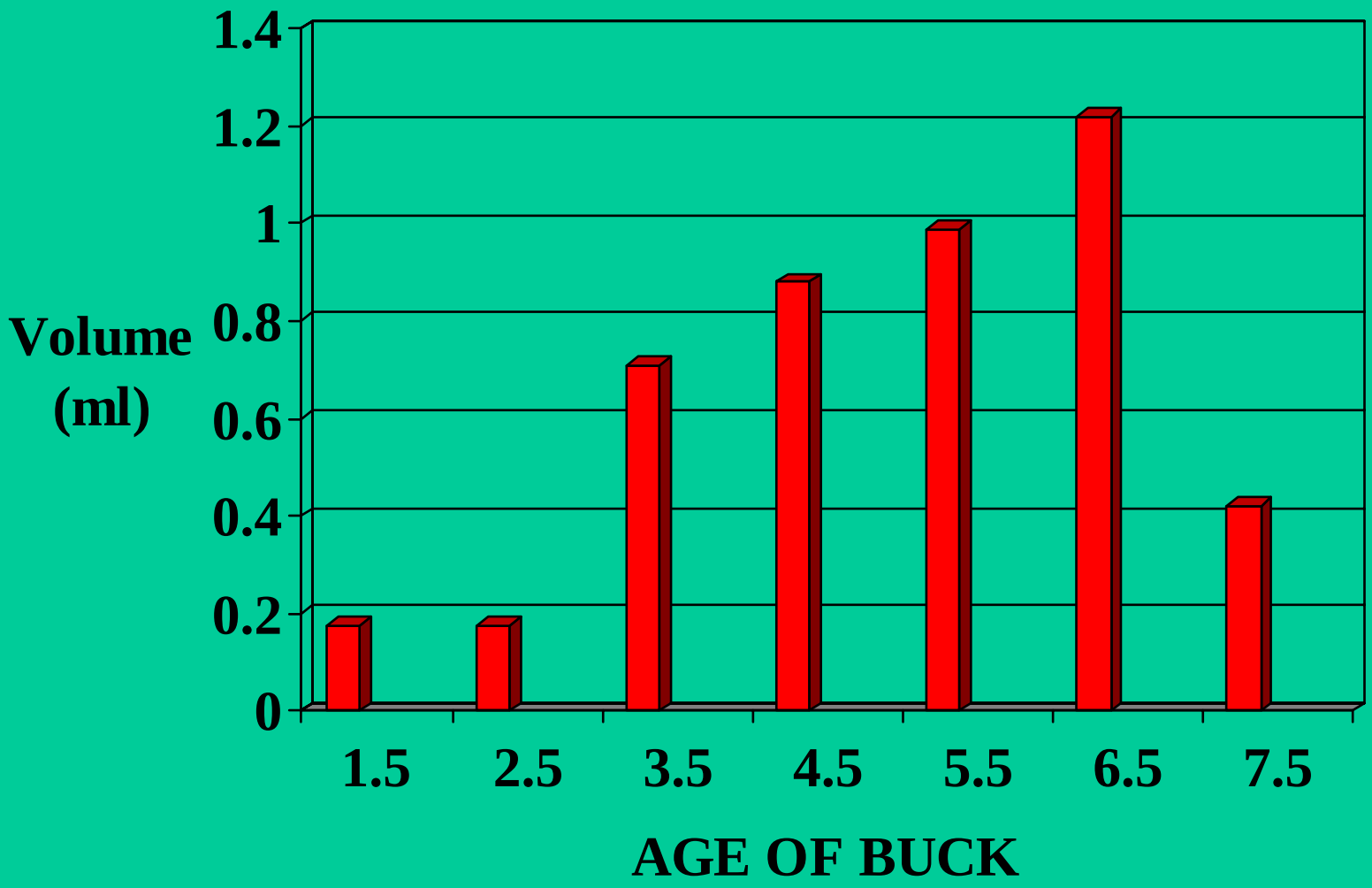
What about ejaculate volume?



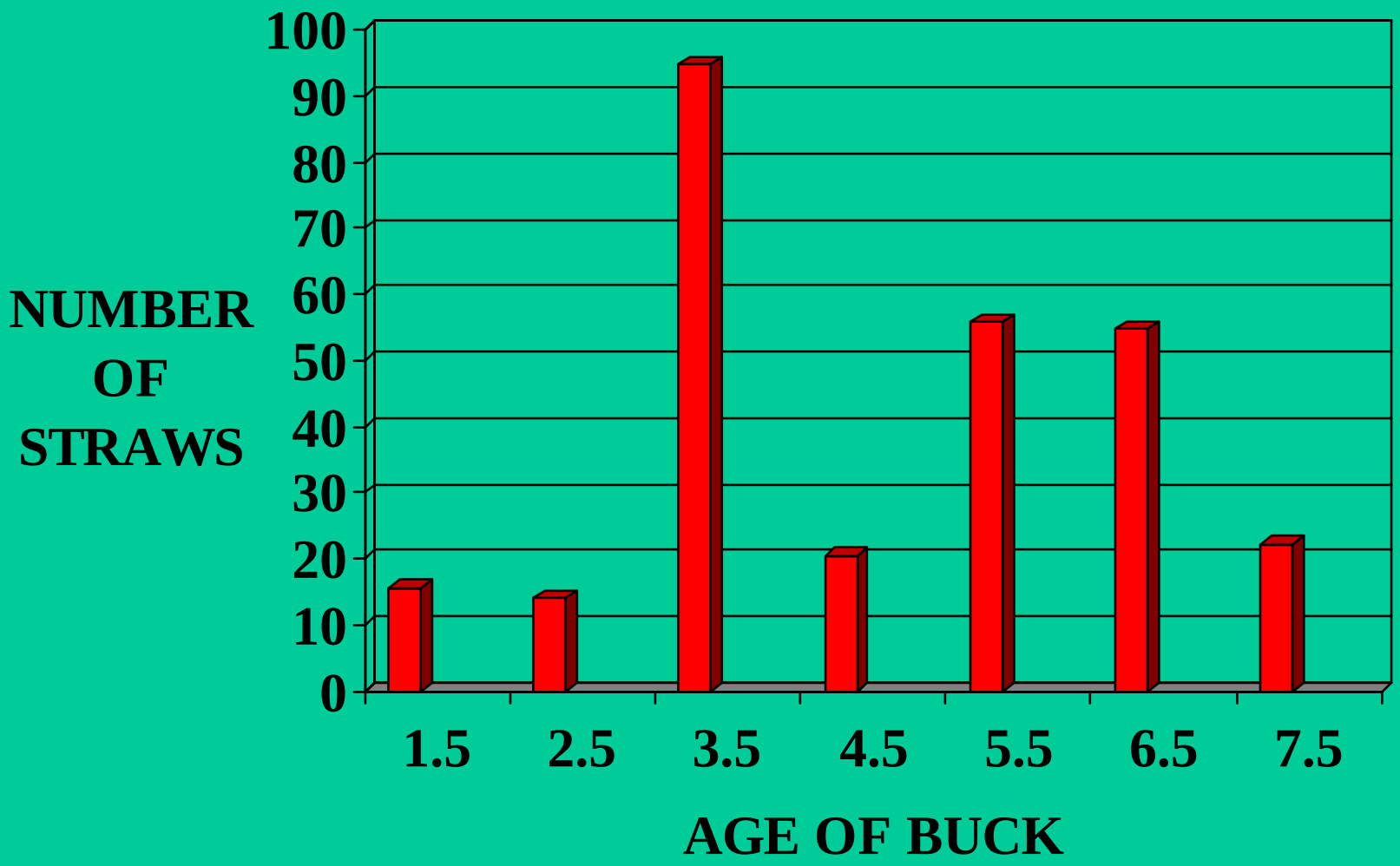
How many straws?



Variation in Ejaculate Volume Produced?



Variation in Straws Produced?

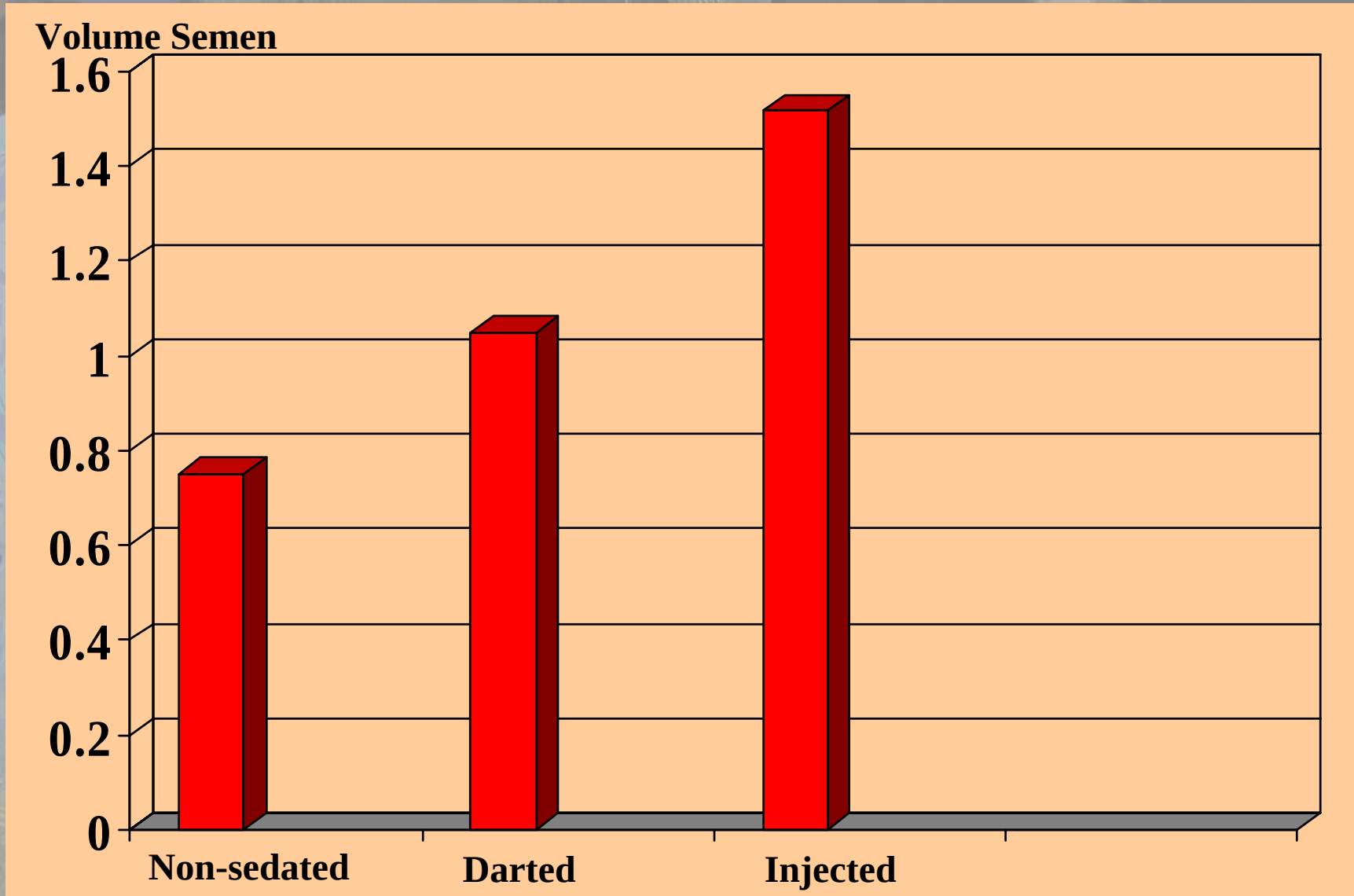




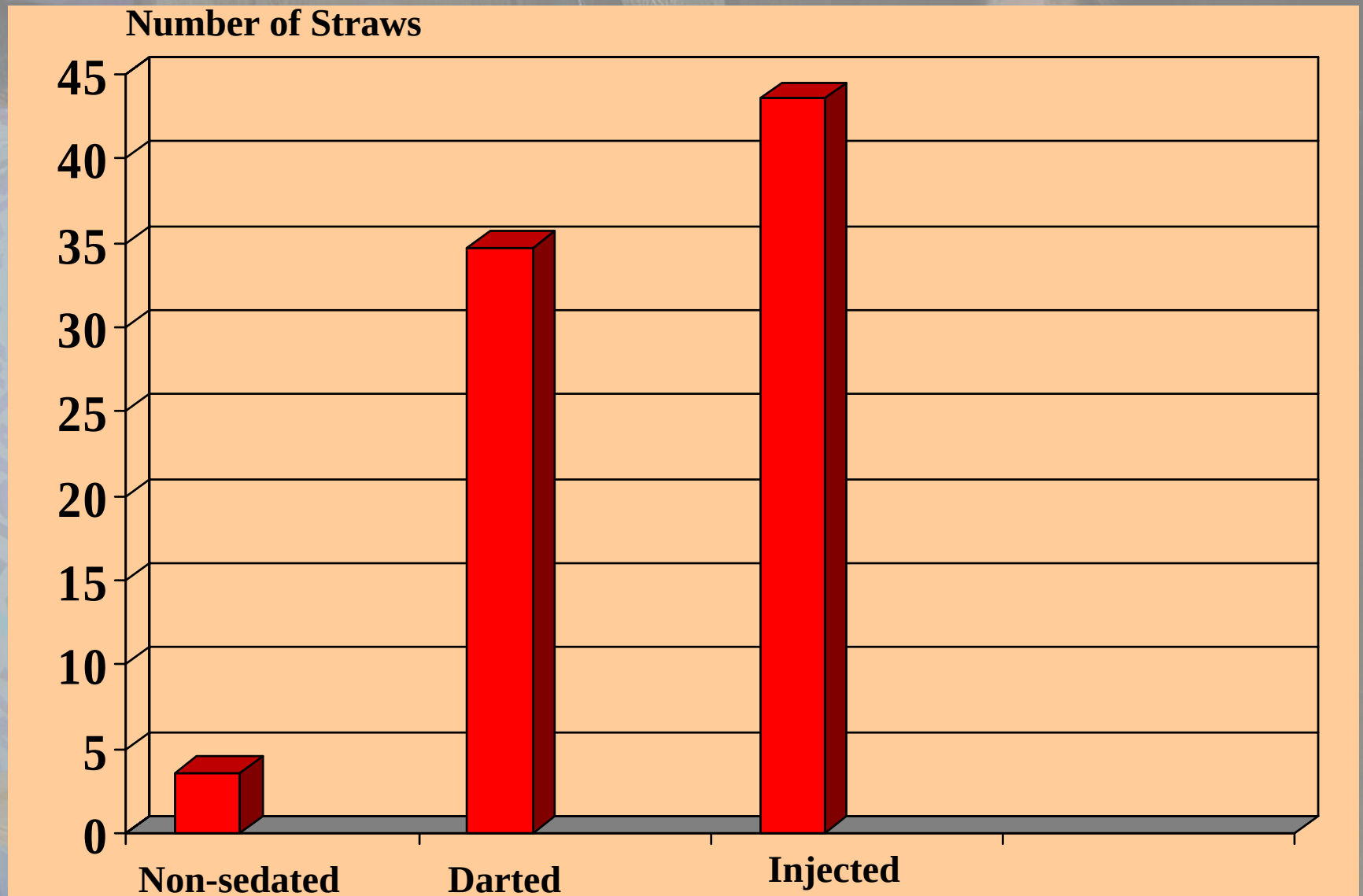
What affects semen production?

Type of Restraint

Volume of Semen Produced: Type of restraint



Semen Straws Produced: Type of restraint

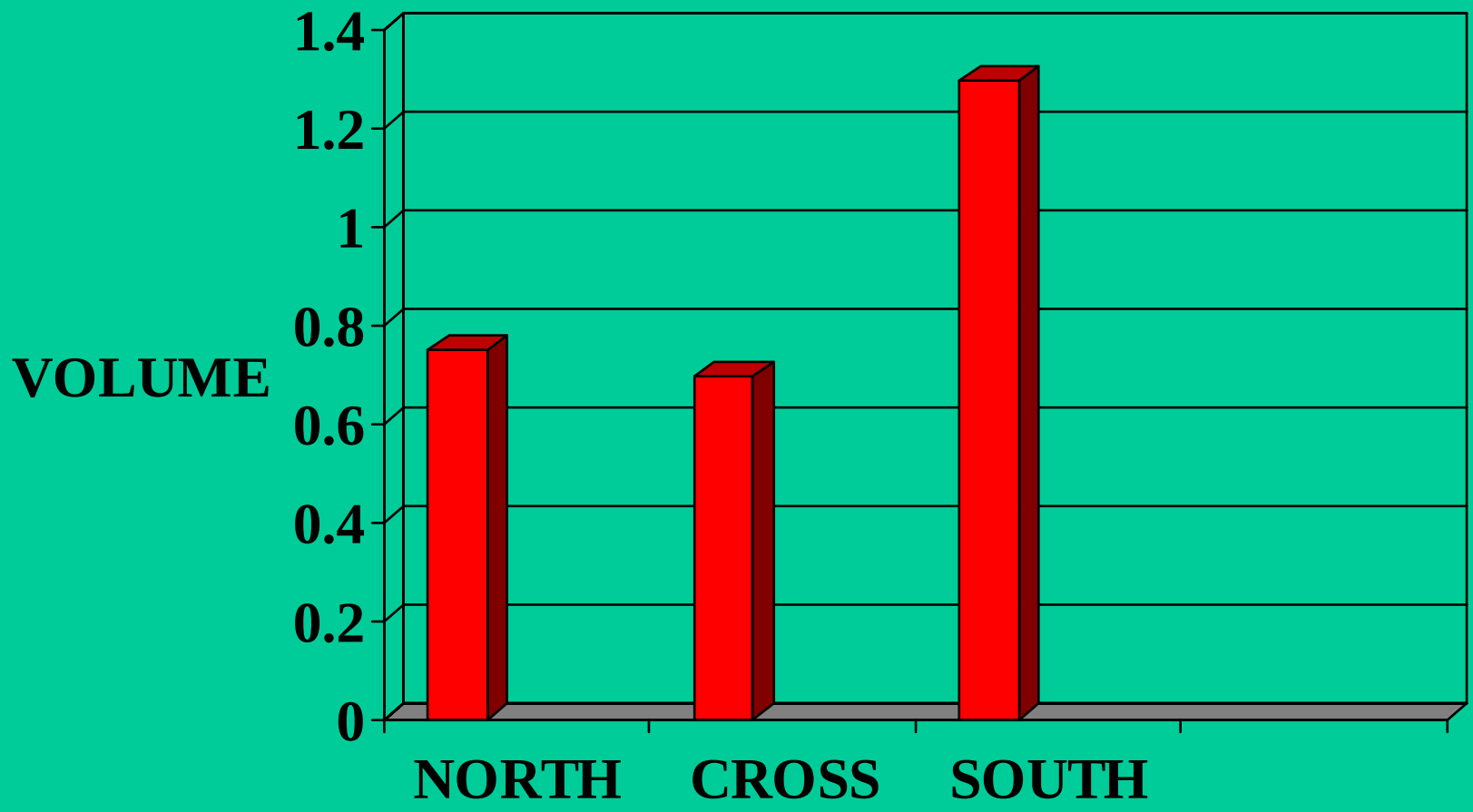




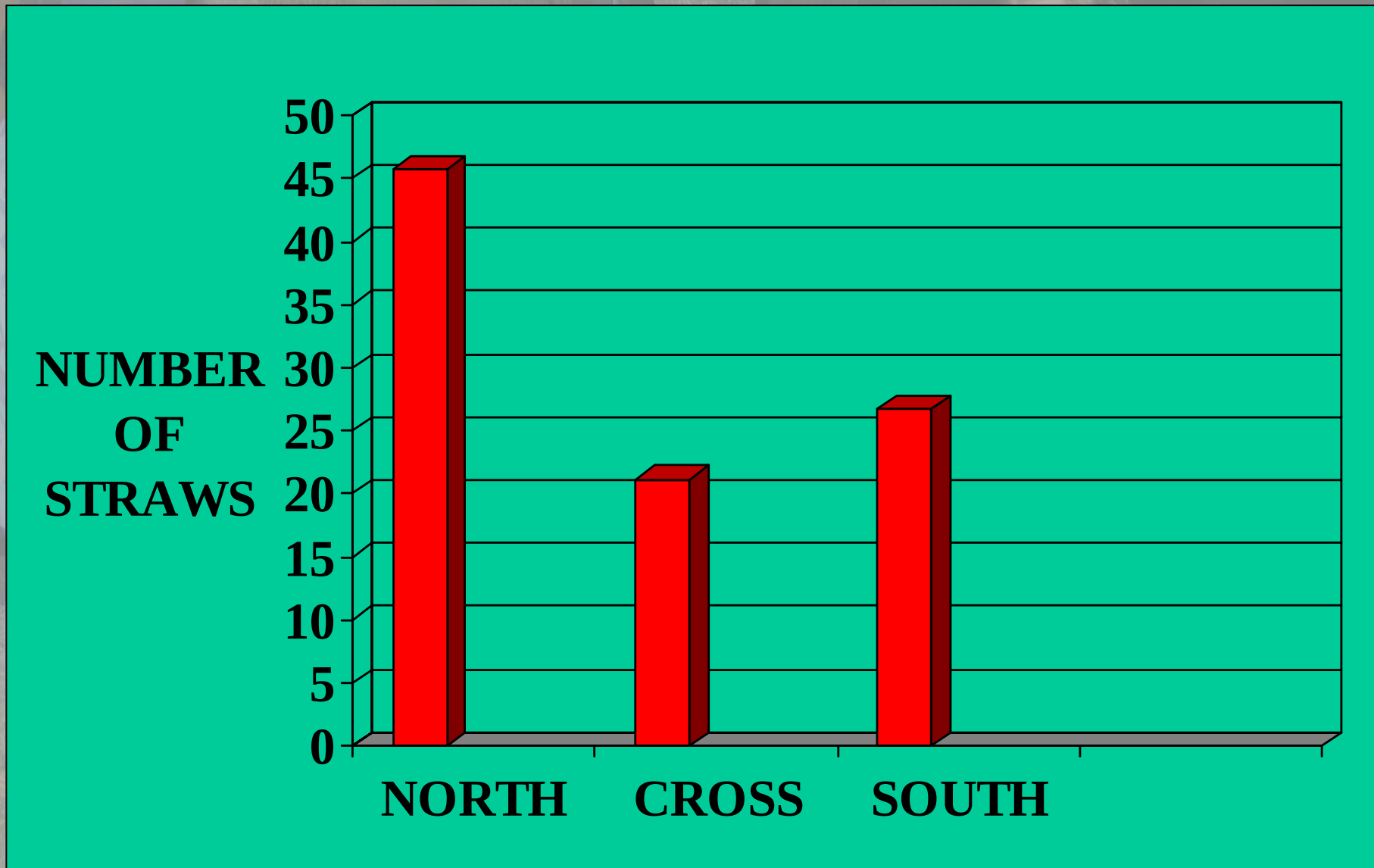
What affects semen production?

Origin of Buck

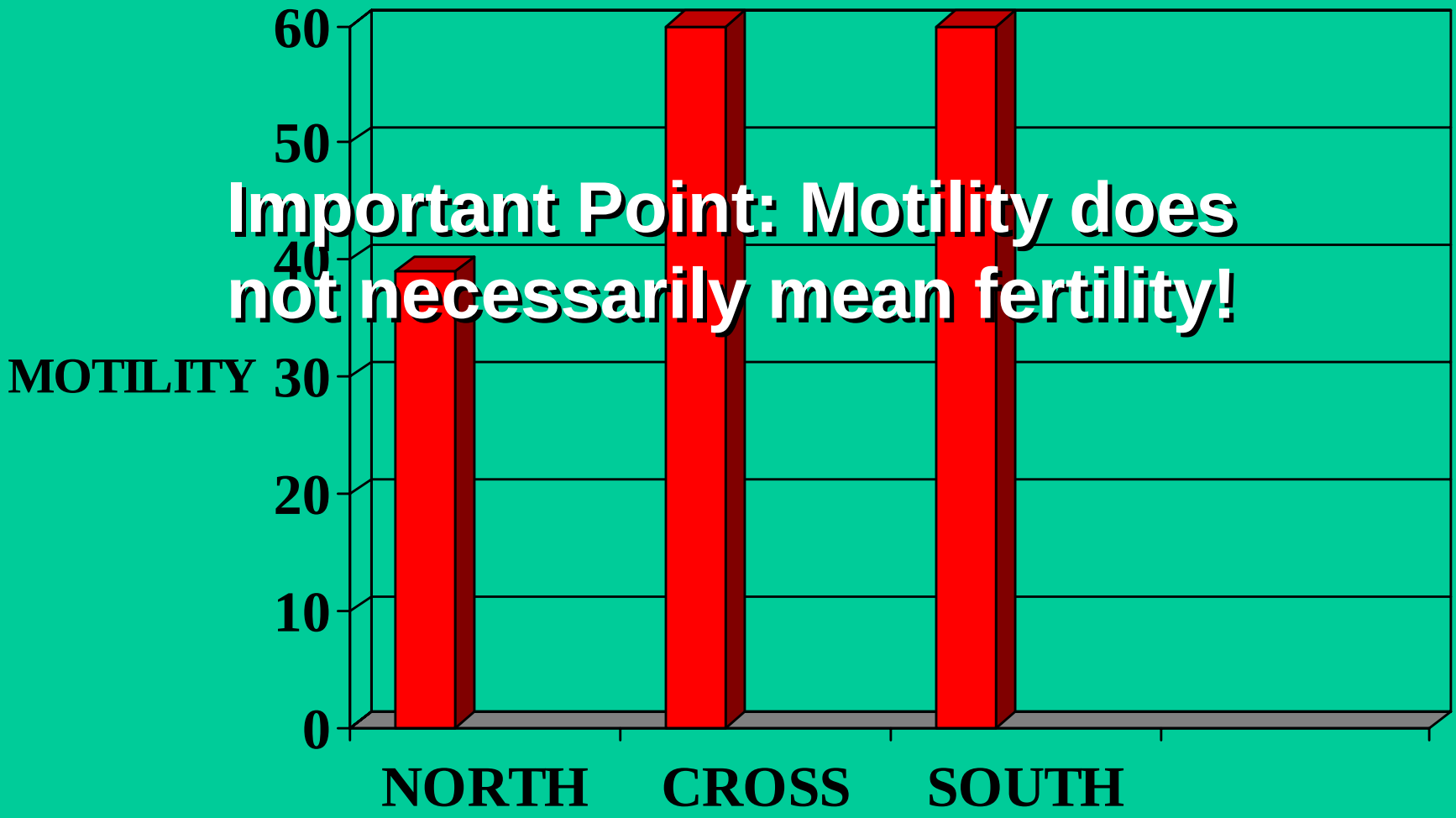
NORTH vs SOUTH vs CROSS?



NORTH vs SOUTH vs CROSS?



NORTH vs SOUTH vs CROSS?



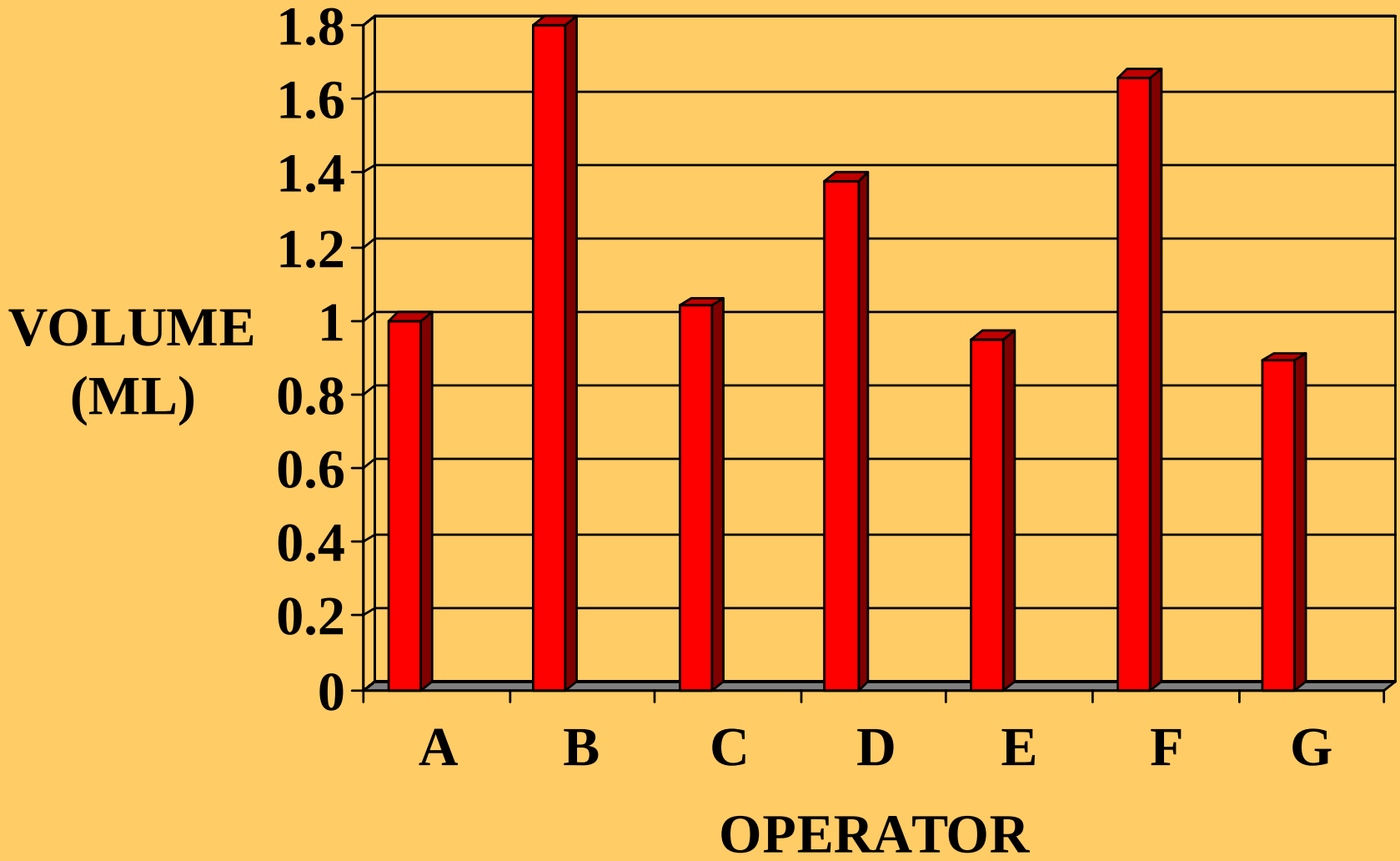
Important Point: Motility does not necessarily mean fertility!



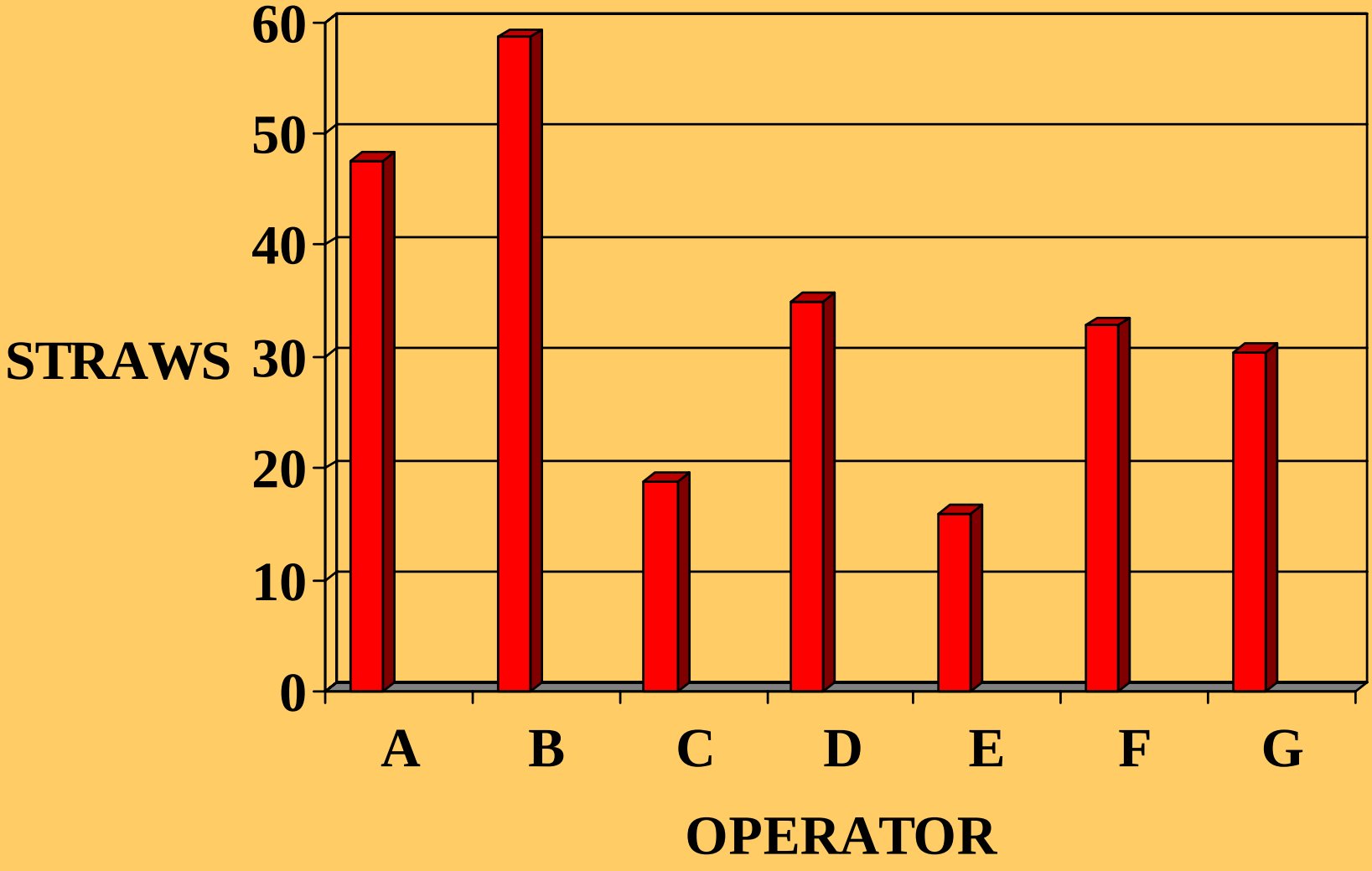
What affects semen production?

Operator

OPERATOR EFFECT?



OPERATOR EFFECT?

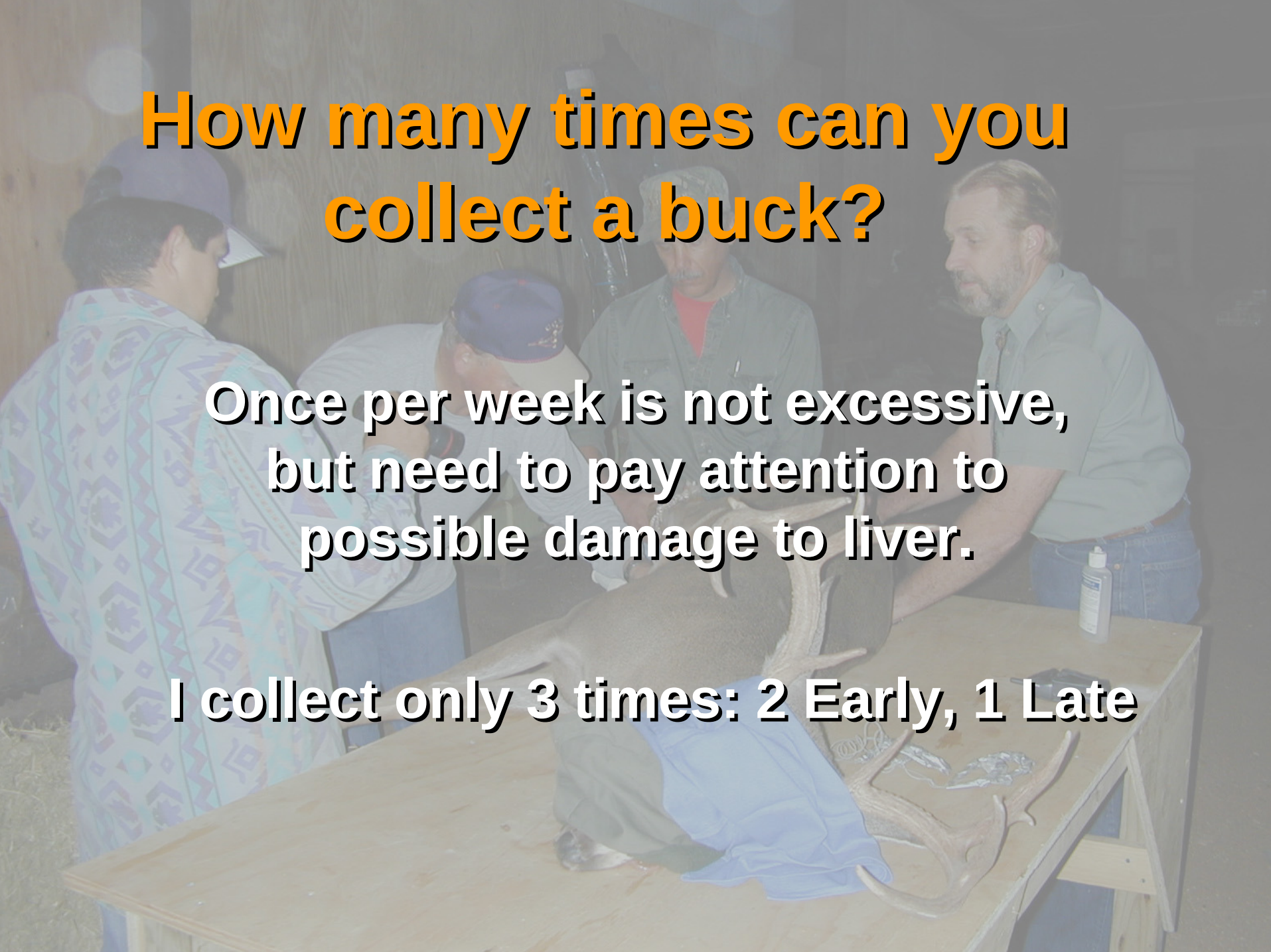



COMMONLY ASKED
QUESTIONS?

What are the risks?



- Injury or death:
  - 368 bucks collected.
  - 5 deaths (1 goring, 3 reversal, 1 heat stress).
  - 2 significant injuries.
- Economic gain?
- Lack of EPDs for bucks.
- Cost.
- Market. (Bigger, bigger, bigger)
- Conception rates.
- Credibility.



How many times can you collect a buck?

Once per week is not excessive, but need to pay attention to possible damage to liver.

I collect only 3 times: 2 Early, 1 Late

Can you collect a buck more than once in a session?

- Yes, but I do not recommend it.
- Why?
- Longer sedation time.
- More Stress.

My average collection time is less than 3 minutes!

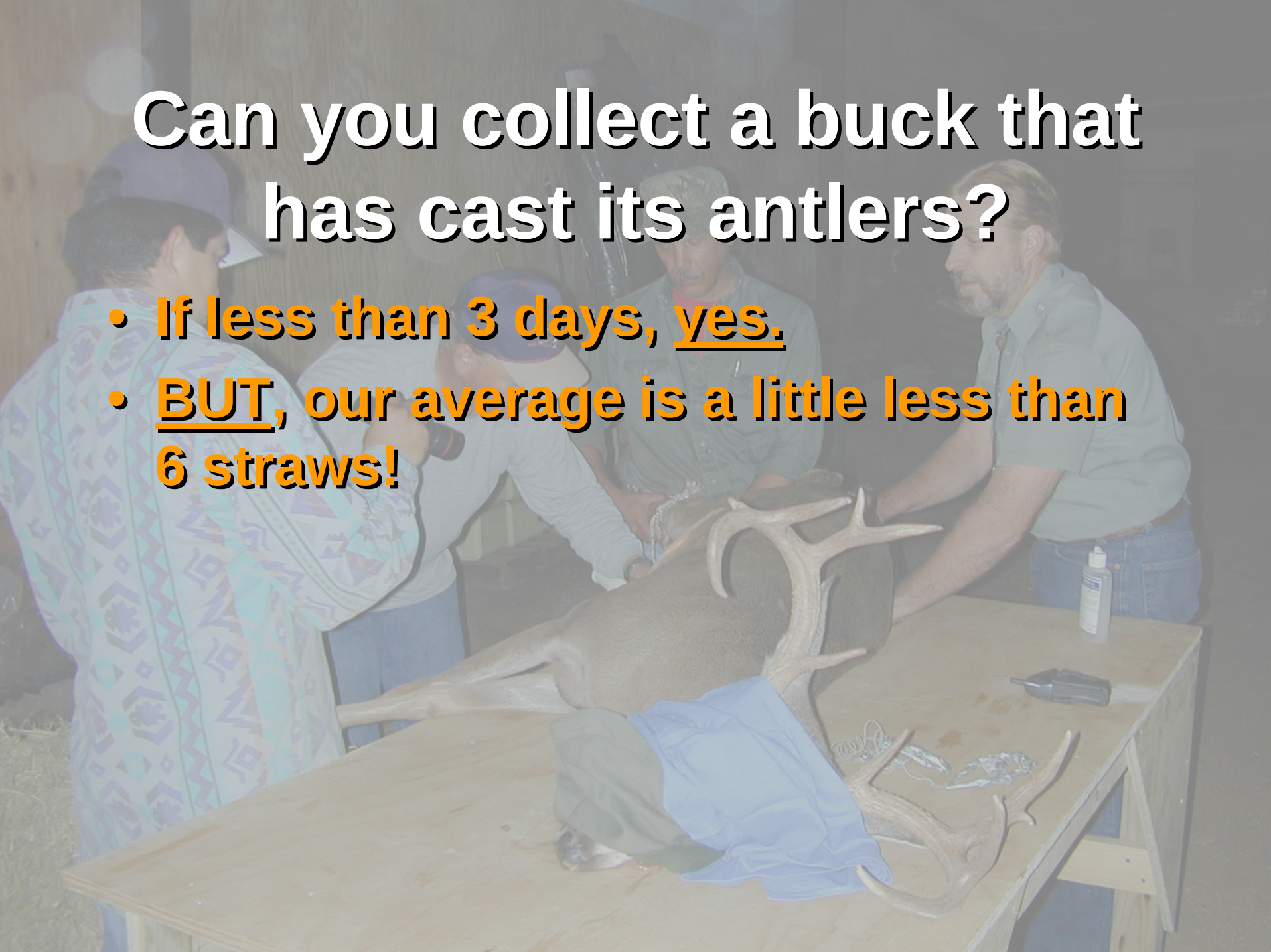
Can you collect a buck in velvet?

NO!!!



Can you collect a buck that has cast its antlers?

- If less than 3 days, yes.
- BUT, our average is a little less than 6 straws!



Can you collect a harvested buck?

- Yes, but average is less than 8 straws.
- Maximum to date, 112 (exception).
- Taking a chance on wild bucks!
- Technique



Dr. Kroll's Rants and Raves!

- ✓ 50 million sperm.
  - 30 million lower limit (singletons)
- ✓ ½ ml straws.
  - ¼ ml nightmare
- ✓ No pellets.
  - Easier for whom?
- ✓ Good 4 hour post thaw.
- ✓ No amateur collections.
  - Chain of custody
  - Old supplies
- ✓ Use only crimped closures.
  - No BB's or powder plugs.
- ✓ Run DNA on each collection.
  - Run DNA on sample used for motility.

Financial Aspects?

- **Effects on income:**



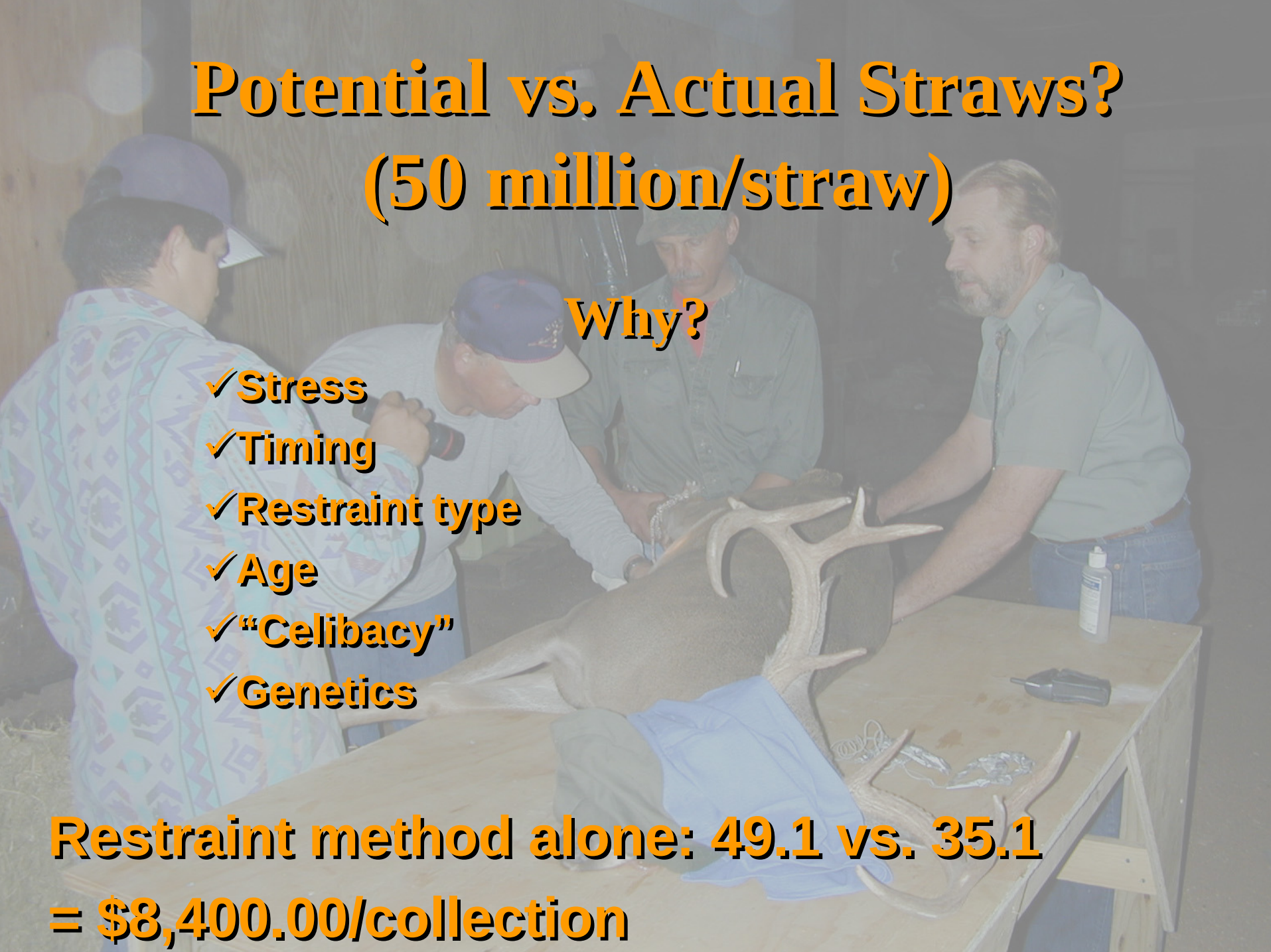


Production?

Average number of potential straws per collection:

(70 million/.5cc)= 35.4
(50 million/.5cc)= 49.6
(30 million/.5cc)= 82.7
(10 million/.5cc)= 248.1

Potential vs. Actual Straws? (50 million/straw)



Why?

- ✓Stress
- ✓Timing
- ✓Restraint type
- ✓Age
- ✓“Celibacy”
- ✓Genetics

Restraint method alone: 49.1 vs. 35.1

= $8,400.00/collection

Deer Farmer.Com

- Selling semen at $500-1,000 per straw attractive…but,
- May be illusionary.
- Possible to collect 1,500 straws per buck per year. 1,500 X $1,000= $1.5 million!
- 500 deer farmers X 1,500 = 750,000 straws!

Then why get into semen?

- Protect your investment.
- Re-establish genetic diversity.
  - Hang onto the founders!
- Increase production from single buck.
- Trading between operators.

A Final Note

- Collect all your yearlings.
- Evaluate at 2-1/2, keep or cull semen.
- Collect again at 2-1/2.
- Evaluate at 3-1/2, even if sold.
- Keep or cull semen.
- Possible to have enough semen by 3-1/2.


Questions?
We thank you!

THE KERR STUDY: AN EVALUATION

- Armstrong, B., D. Harmel, B. Young, and Fielding Harwell. 1995. *The Management of spike bucks in white-tailed deer population. PWD LF* W7100-247.
- Sample size = 64 deer.