



المدرسة العليا للتكنولوجيا

Ecole Supérieure de Technologie

سيدي بنور - Sidi Bennour

جامعة شعيب الدكالي

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Université Chouaïb Doukkali

**The 2nd CZU Prague hybrid seminar
Animal reproduction, sperm cryopreservation and analysis: an international experience**

How to succeed AI in sheep and goat

Pr ALLAI Larbi

Qualified professor at Higher School of Technology Sidi Bennour, Chouaib Doukkali University El Jadida, Morocco.

Specialty: Biochemistry , Biology and biotechnology of reproduction.

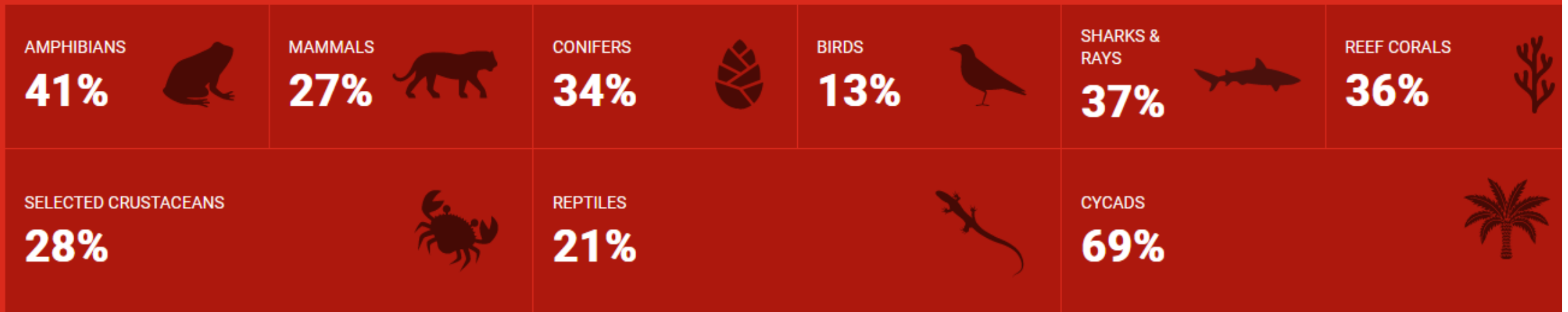
- The several special reproduction techniques available, especially **artificial insemination(AI)** with fresh and frozen semen,
- AI provides valuable practical opportunities to the modern sheep and goat breeder to improve reproduction efficiency and to enhance genetic improvement.
- AI was the first important biotechnology applied to improve the genetics of farm animals.

Introduction

According to the Species Survival Commission (IUCN—World Conservation Union; <http://www.iucnredlist.org/>).

More than 42,100 species are threatened with extinction

That is still 28% of all assessed species.



Introduction

For that development of AI program is became necessary

Artificial insemination is the introduction of semen directly into the female reproductive tract through means other than copulation.



Introduction

Artificial insemination (AI)

=

Production and conservation of semen

+

Ewes estrus Synchronization

+

Act of insemination

+

Pregnancy diagnosis

+

Alimentation

+

Environments

The main factors affecting AI

- The breeds
- Age of the ewe
- The season of insemination
- The use of fresh, cooled, chilled, frozen semen
- The labour
- Time of insemination after oestrus synchronisation
- Dose of PMSG used
- The extender used
- Dose of inseminated semen
- The method (vaginal, cervical, cervico-uterinal or laparoscopic) used

Succeed AI in sheep and goat

The success of any AI program is largely dependent generally **on three primary factors:**

Use of viable semen.

Appropriate timing of insemination relative to oestrus.

Proper deposition of semen in the doe's reproductive tract.

Succeed AI in sheep and goat

Step 1: Select high-quality animals



Step 2: Semen collection and evaluation



Step 3: Semen processing



Step 4: Induce ovulation



Step 4: Insemination Techniques



Step 5: Monitor the animals after insemination



Step 6: Perform pregnancy testing

Recommendations and opinion

Ram and goat (**4 years aged**) semen have 3.5 milliard spermatozoa/ml

1-3 ml volume for one ejaculation

Use the first ejaculation from the ram or goat

Female should be in good form

Recommendations and opinion

Using Artificial vagina In place of EE

Initial Sperm quality

- Sheep : V > 2 mL, MM > 3.5, IM > 80%, C > 3.5B SPZ/mL
- Goat: V > 1,5 mL, MM > 44, IM > 85%, C > 2.5B SPZ/mL

Whole semen (SPZ+ seminal plasma) without any centrifugation even in goat or sheep

Recommendations and opinion

- **Liquide storage**

0.8 B SPZ/mL using a comercials diluents

Storage at 5°C to 15°C during 8 h **Maximum.**

- **Cryopreservation storage**

0.2 B SPZ/mL using comercials diluents and cryoprotectors (Glycerol)

(One steps);

- **Equilibration**

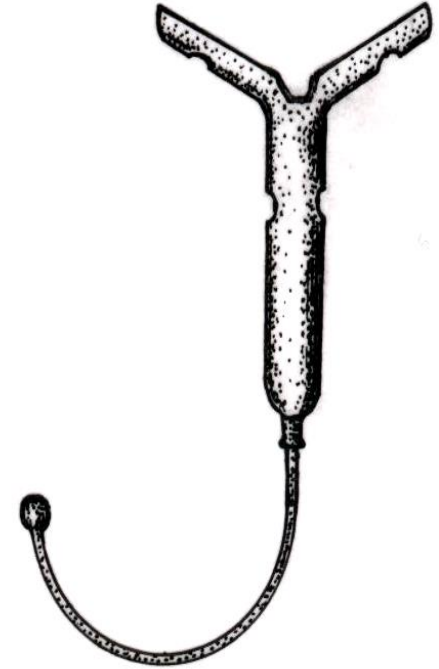
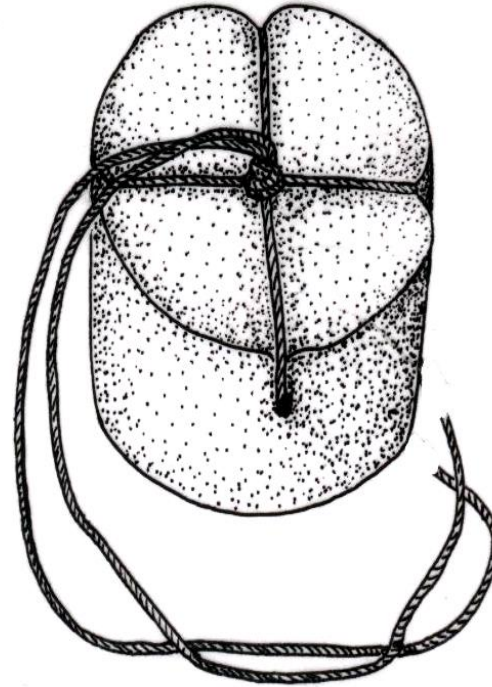
3H at 5°C and storage at -196°C for at least two weeks

- **Thawing for 30 seconde in 37°C**

Recommendations and opinion

In the case of sponges, ovulation time is about 58-60 hours after sponge removal.

With CIDR's ewes and does come on heat and ovulate about 4 hours earlier, thus about 54 hours after CIDR removal.



Recommendations and opinion

Keep in mind the differences between breeds and seasonal effects
e.g. goat or sheep breeds in the in autumn where there is a marked
shortening of daylight, can ovulate as early **as 40-46 hours** after
CIDR or sponge removal.

Use of teaser rams/bucks to determine timing.

Recommendations and opinion

Dose of PMSG????

Recommendations and opinion

- **Use sterile techniques** to minimize the risk of infection
- **Keep an eye out for any symptoms of pain, illness, or other issues in the animals.**
- To ensure the success of the insemination, provide sufficient diet (steaming-up) and care of animals(**Good Alimentation**)
- Perform **a early** pregnancy testing to check a results

Conclusion

Each research team must **make its own protocol**, based on **the articles and work already published** in order to improve the success rate of AI, because the latter depends **on several factors**.

Each reaseach team must checked the ovulation time of **there breeds**.

Conclusion

Until now there are not absolute factors that correlate with the success rate of AI using sperm analysis methods.

All the laboratories around the world, need to use Bio-informatics and math models to find some equation to predict fertility using sperm quality parameters.



Pr Bouchra El AMIRI
Pr Quan Guabo
Pr Maria Jesús Palomo Peiro
Pr Nasser Boubker
Pr Xavier Druart

And

All my friends

