

Fall Lambing: Overcoming Seasonality of the Ewe

by

Erin Windorski

Questions for Today

- 1) Why do we see seasonal reproductive activity in the ewe?**
- 3) What are the advantages of overcoming seasonal reproduction in the ewe?**
- 5) What methods can be used to overcome seasonal reproduction in the ewe?**

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Why do we see seasonal reproductive activity in the ewe?

Two main factors:

2) Climate

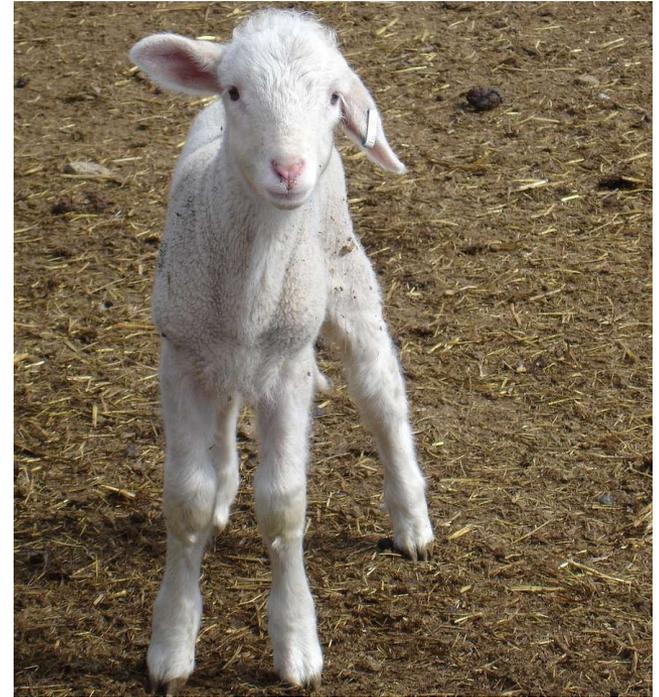


Why do we see seasonal reproductive activity in the ewe?

Two main factors:

2) Climate

- **Sheep in a temperate climate with cold winter and warm summer tend to be more seasonal. It is natural for the sheep to lamb when the food is plentiful in the spring.**



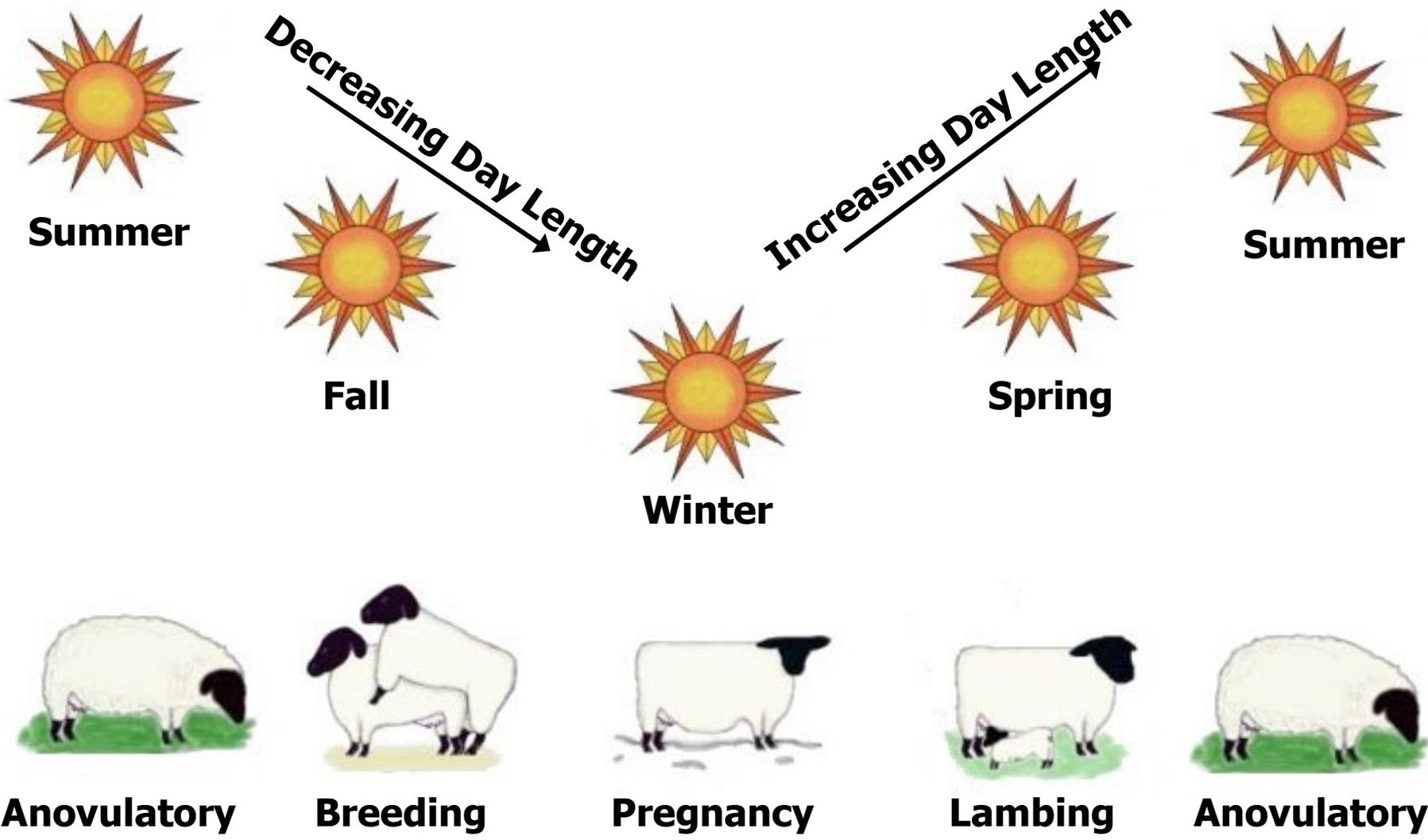
Why do we see seasonal reproductive activity in the ewe?

Two main factors:

- **Climate**
- **Day Length**



Seasonal Breeding Cycle in Sheep



Geisert, 1999

Why are sheep seasonal breeders?

Two main factors:

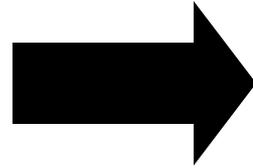
- **Climate**
- **Day Length**
 - **The reaction between the amount of light and the amount of melatonin produced**



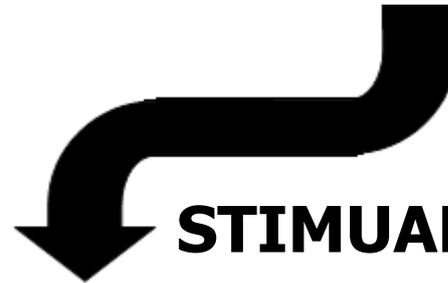
Day Length



**Decreasing
Daylight**

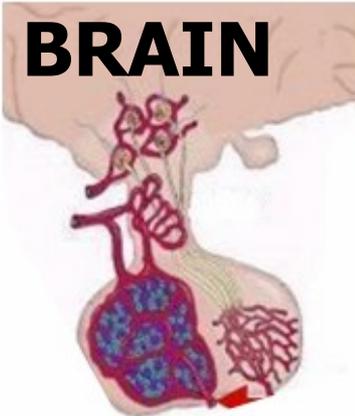


**Melatonin
Production**

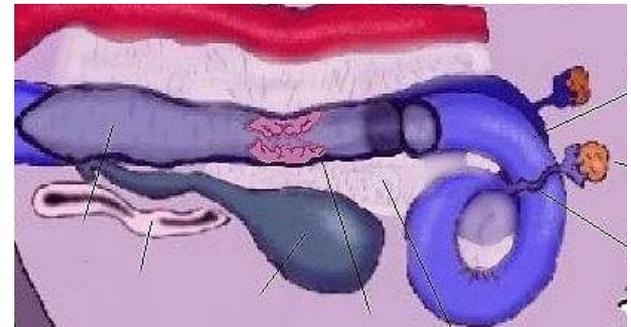


STIMUATION

BRAIN

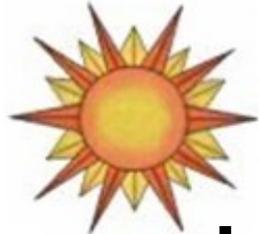


**COMMUNICATION
VIA HORMONES**



REPRODUCTIVE TRACT

Day Length

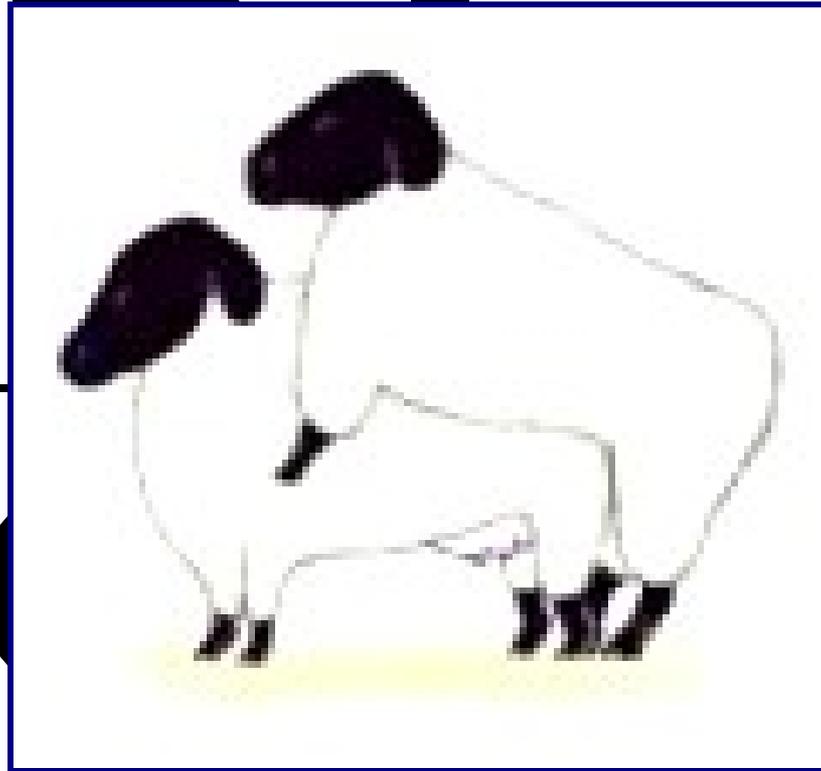


Decreasing Daylight

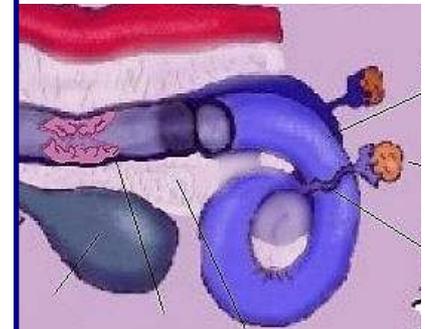
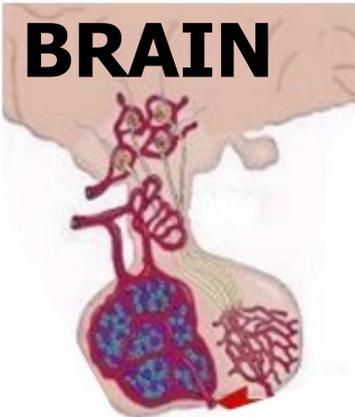
Melatonin

tion

MUALTION

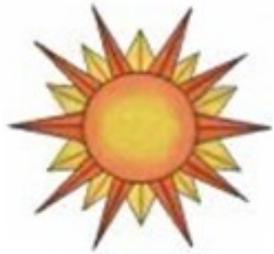


BRAIN

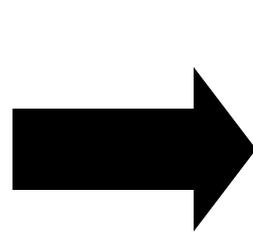


REPRODUCTIVE TRACT

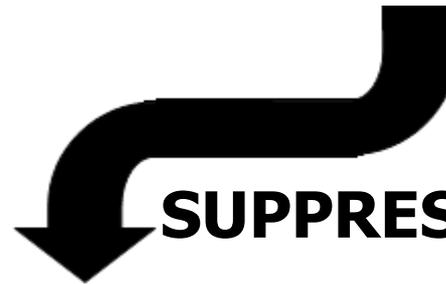
Day Length



**Increasing
Daylight**

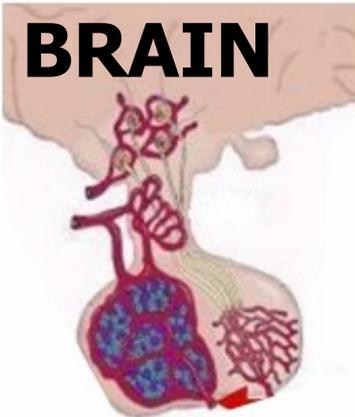


**Melatonin
Production**

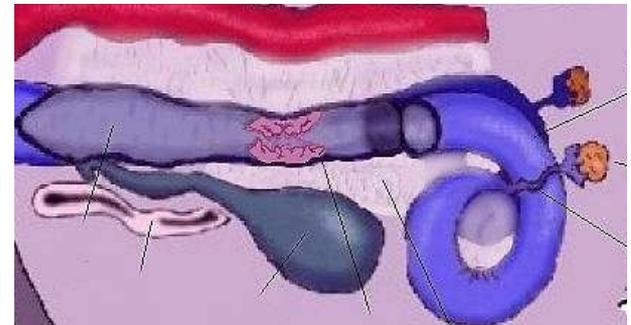


SUPPRESSION

BRAIN



**COMMUNICATION
VIA HORMONES**



REPRODUCTIVE TRACT

Day Length

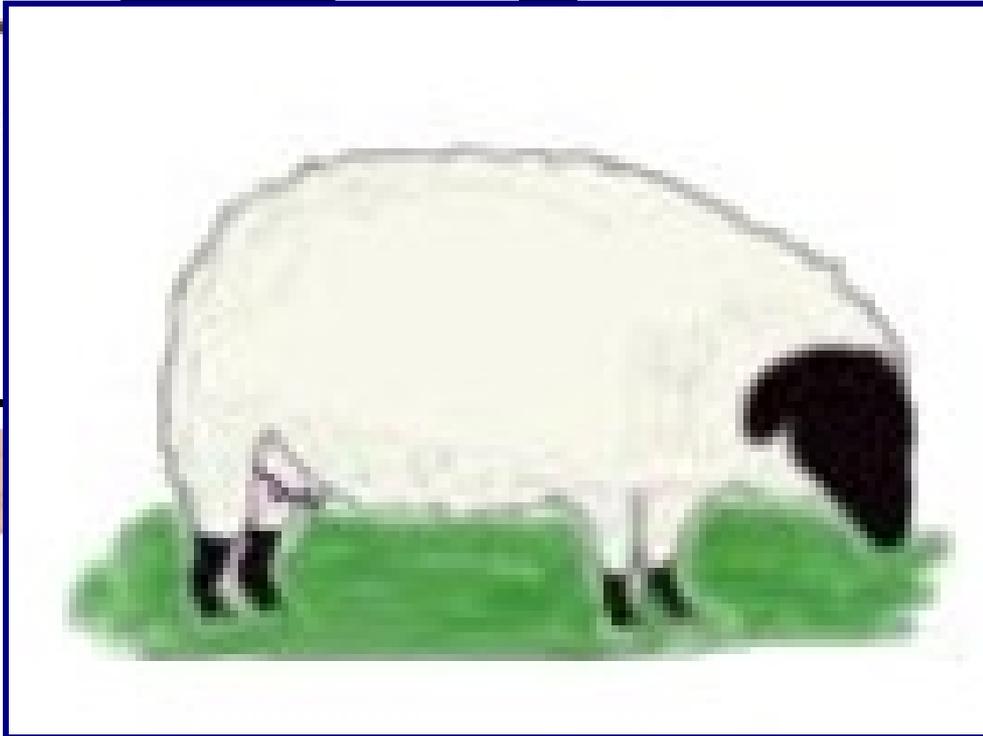


Increasing Daylight

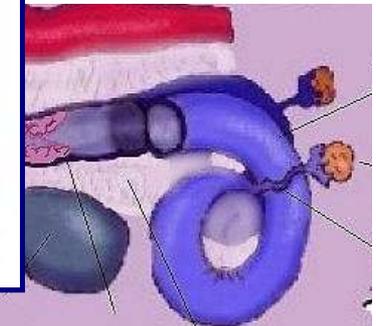
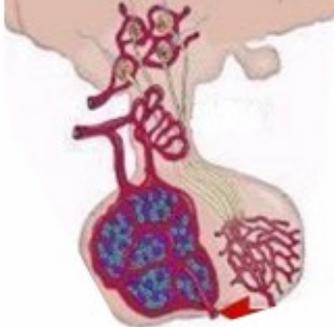
Melatonin

on

PRESSION



BRAIN



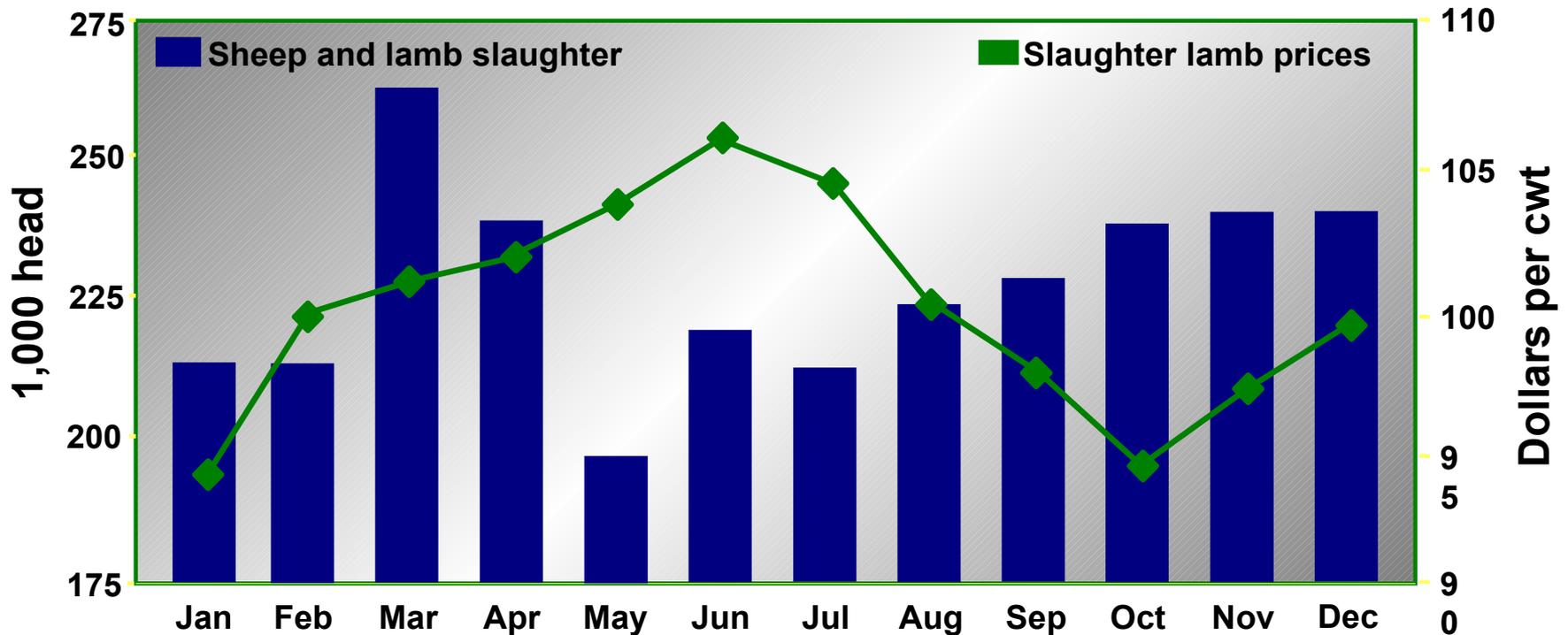
REPRODUCTIVE TRACT

What does seasonal reproduction do to the supply of lamb throughout the year?

- **Supply and Demand**
 - **Creates peaks and valleys on the price curve of lamb.**
- **↑ Supply = ↓ Demand = ↓ Price**

How does seasonality effect the supply of lamb?

U.S. Monthly Lamb Slaughter in 2004 and 2005



Source: USDA/NASS

Questions for Today

- 1) Why do we see seasonal reproductive activity in the ewe?**
 - What are the advantages of overcoming seasonal reproduction in the ewe?**
 - What methods can be used to overcome seasonal reproduction in the ewe?**

What are the benefits of overcoming seasonality?

- **Better use of facilities and resources**
- **Having lambs available for market all year long**



What are the benefits of overcoming seasonality?



- **Instead of having empty barns 9 months out of the year.**

- **Use your barns more by having a fall and spring lambing.**

What are the benefits of overcoming seasonality?

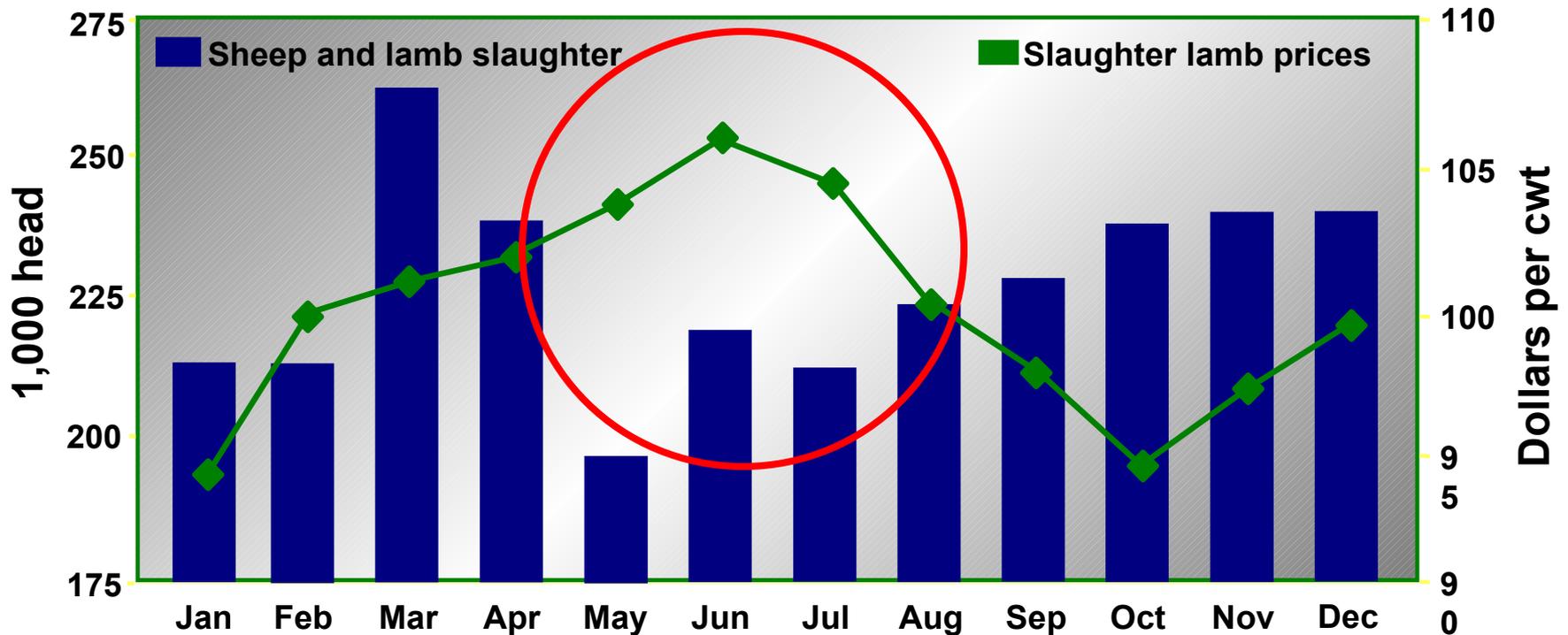
- **Fall lambing allows for taking advantage of fall forage during late gestation and early lactation**
- **Better weather conditions**
- **More time to get lambs to a high market weight for the higher market prices during the spring**

What are the benefits of overcoming seasonality?

- **Taking advantage of the price increases during low supply of lamb.**

What are the benefits of overcoming seasonality?

U.S. Monthly Lamb Slaughter in 2004 and 2005



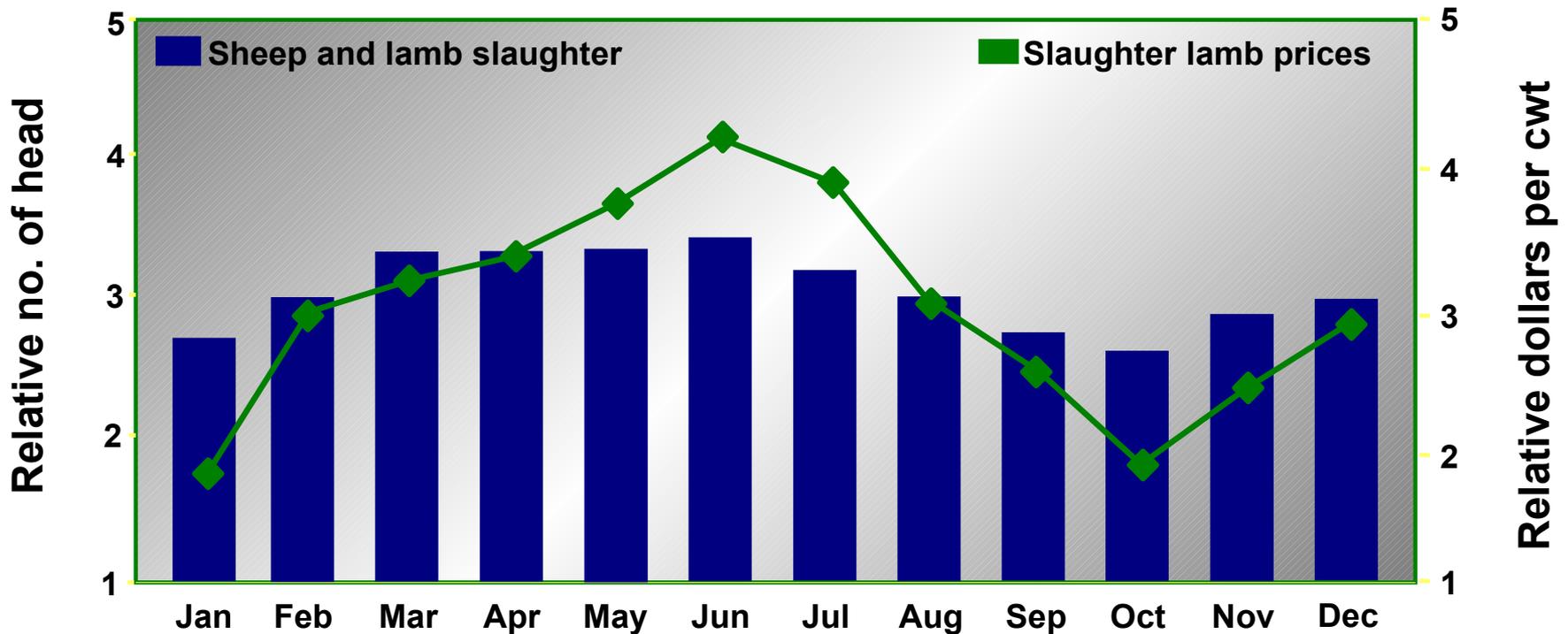
Source: USDA/NASS

What are the benefits of overcoming seasonality?

- **Taking advantage of the price increases during low supply of lamb.**
- **Change North Dakota's Monthly Supply of lamb by using out of season lambing techniques.**

What are the benefits of overcoming seasonality?

Potential North Dakota Monthly Lamb Slaughter



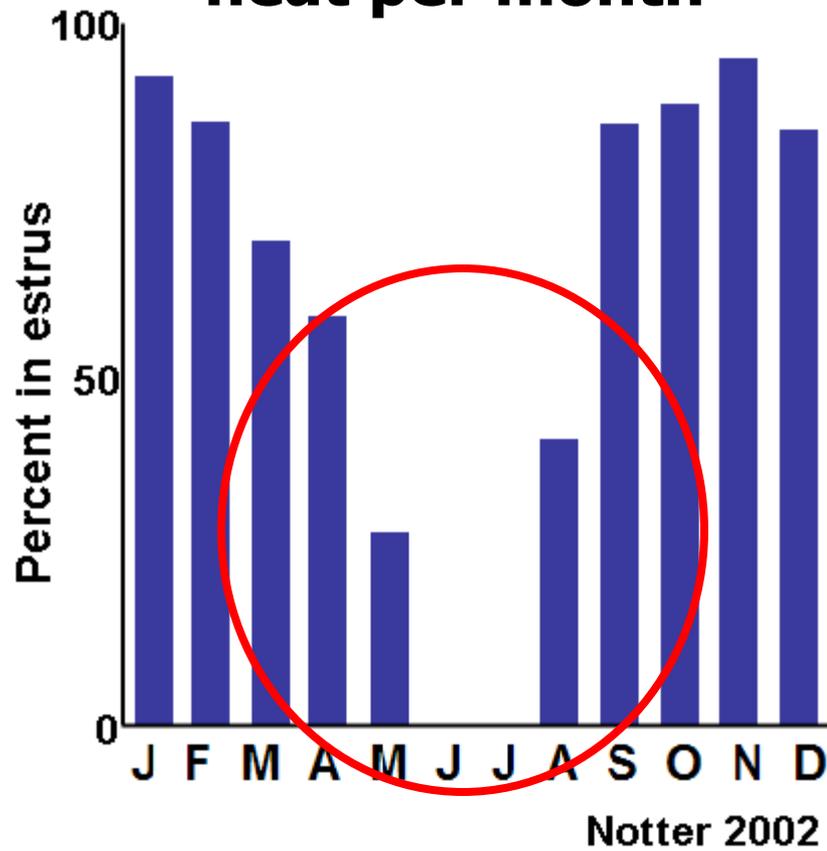
Source: USDA/NASS

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How can we overcome seasonality in ewes?

Normal percentage of ewes in heat per month



What methods can be used to overcome seasonal reproduction in the ewe?

NATURAL

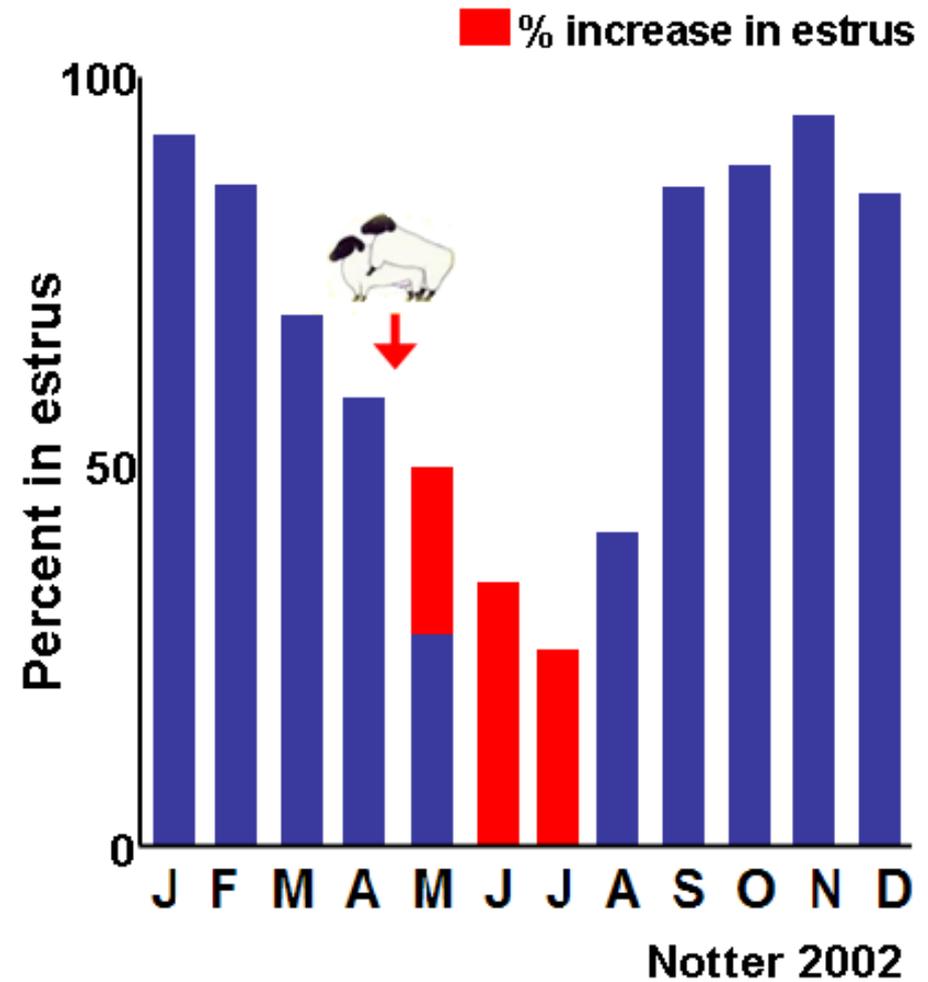
- **Getting ewe to produce hormones naturally**
 - Ram Effect
 - Selection

ARTIFICIAL

- **Treating ewes with hormones that are normally seen during her reproductive cycle**
 - Progestins
 - Gonadotropins

Ram introduction

- The ewe needs to be completely isolated from the ram for 60 days.
- The introduction of a viable ram will induce estrus in the ewe which is caused by release of gonadotropins.

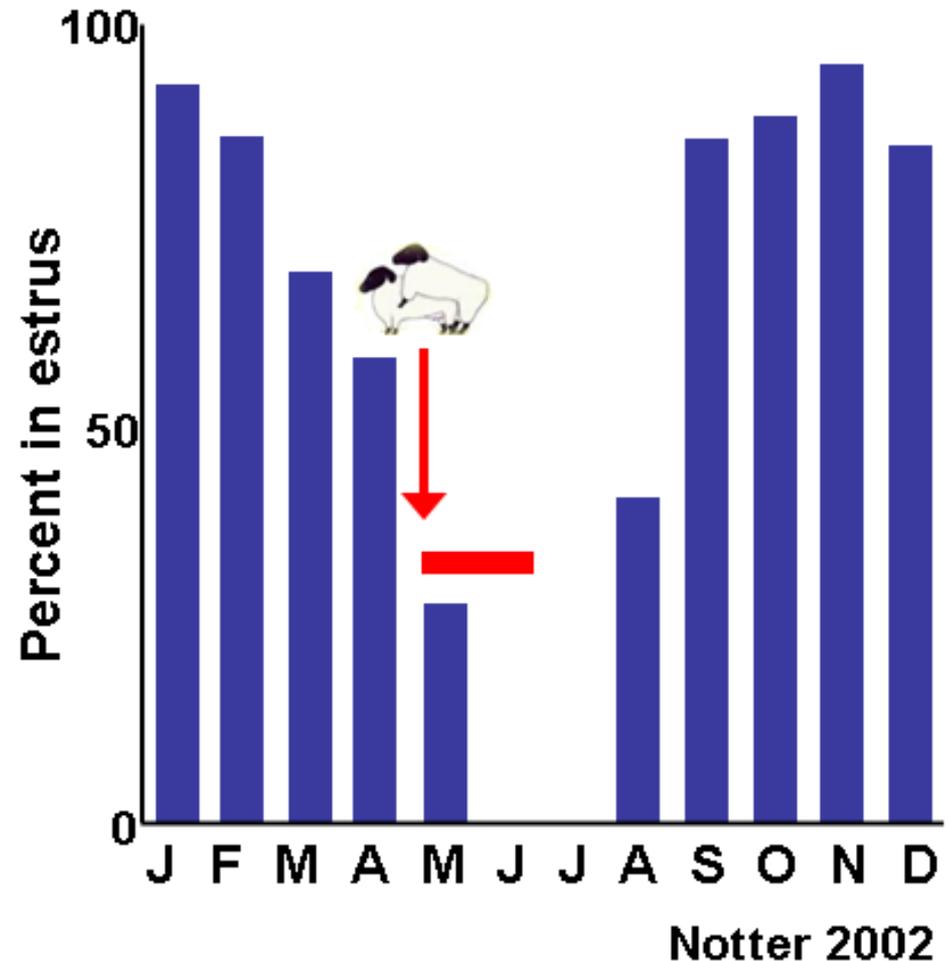


Ewe lamb selection

- **Ewe lamb selection is based on the idea that being seasonal is partially genetic.**
- **Therefore, any ewes bred out of season are more likely to have ewe lambs that will do the same.**
- **This is done in two phases: challenge phase and clean-up phase.**

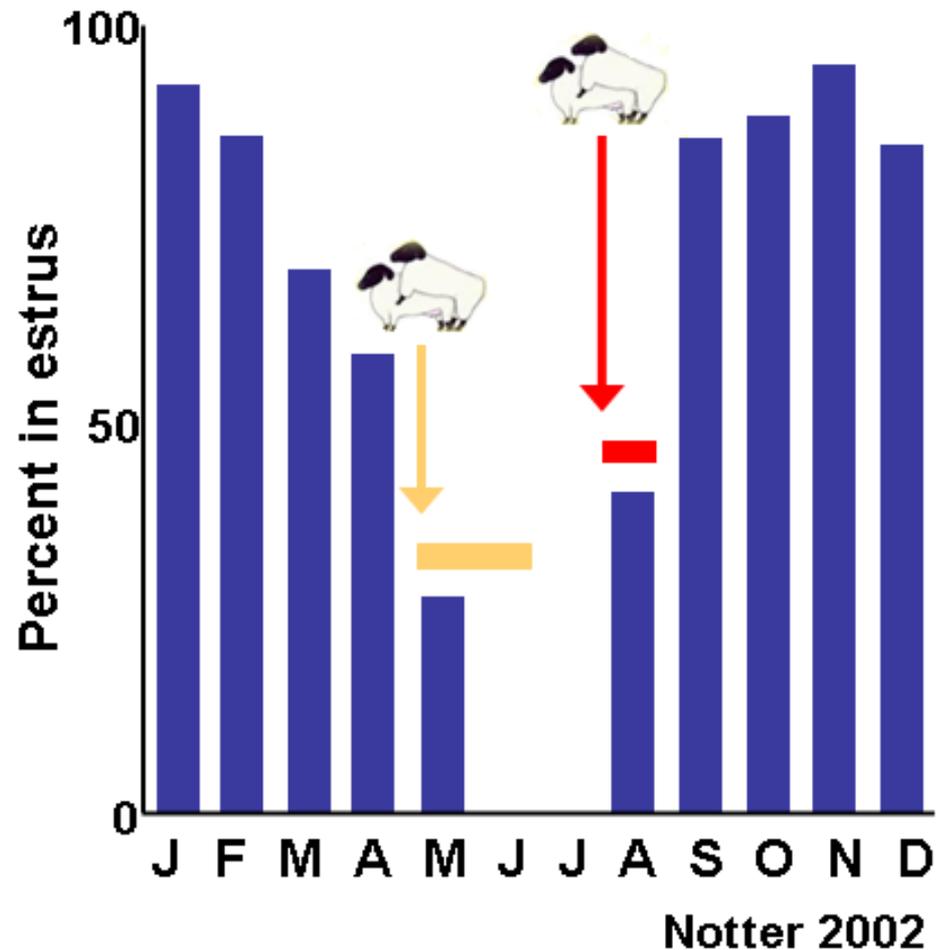
Ewe lamb selection

- **Challenge phase**
 - **October and November lambing**
 - **Keep replacement ewe lambs**



Ewe lamb selection

- **Challenge phase**
 - October and November lambing
 - Keep replacement ewe lambs
- **Clean-up Phase**
 - January lambing
 - No Replacements



Natural Techniques

- **Ram Effect**

- **Advantages:**

- **Cost effective**

- **Disadvantages:**

- **Not always effective on all ewes**

- **Ewe lamb Selection**

- **Advantages:**

- **Cost effective**

- **Disadvantages:**

- **Takes many breeding seasons to build up a flock**

What methods can be used to overcome seasonal reproduction in the ewe?

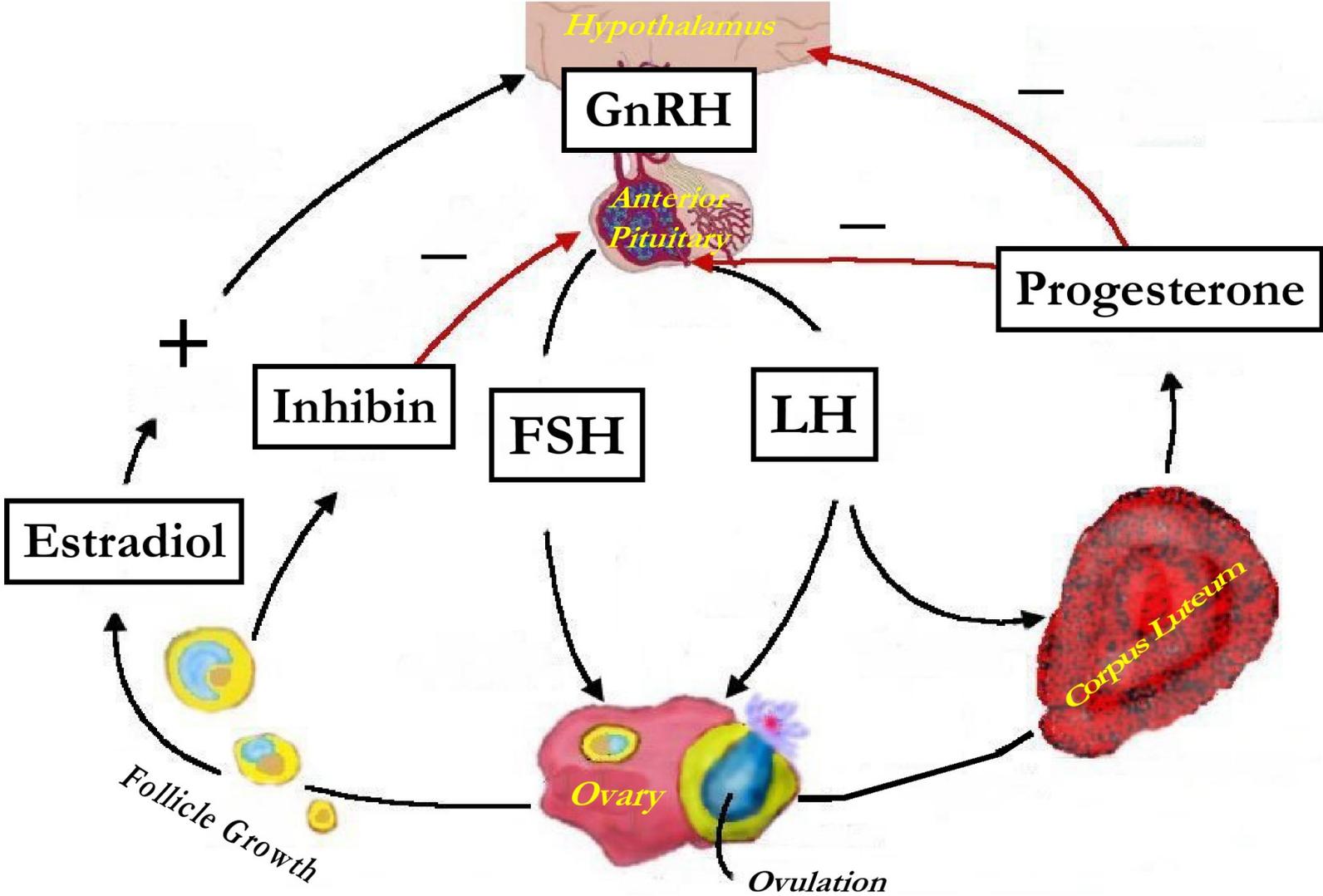
NATURAL

- **Getting ewe to produce hormones naturally**
 - **Ram Effect**
 - **Selection**

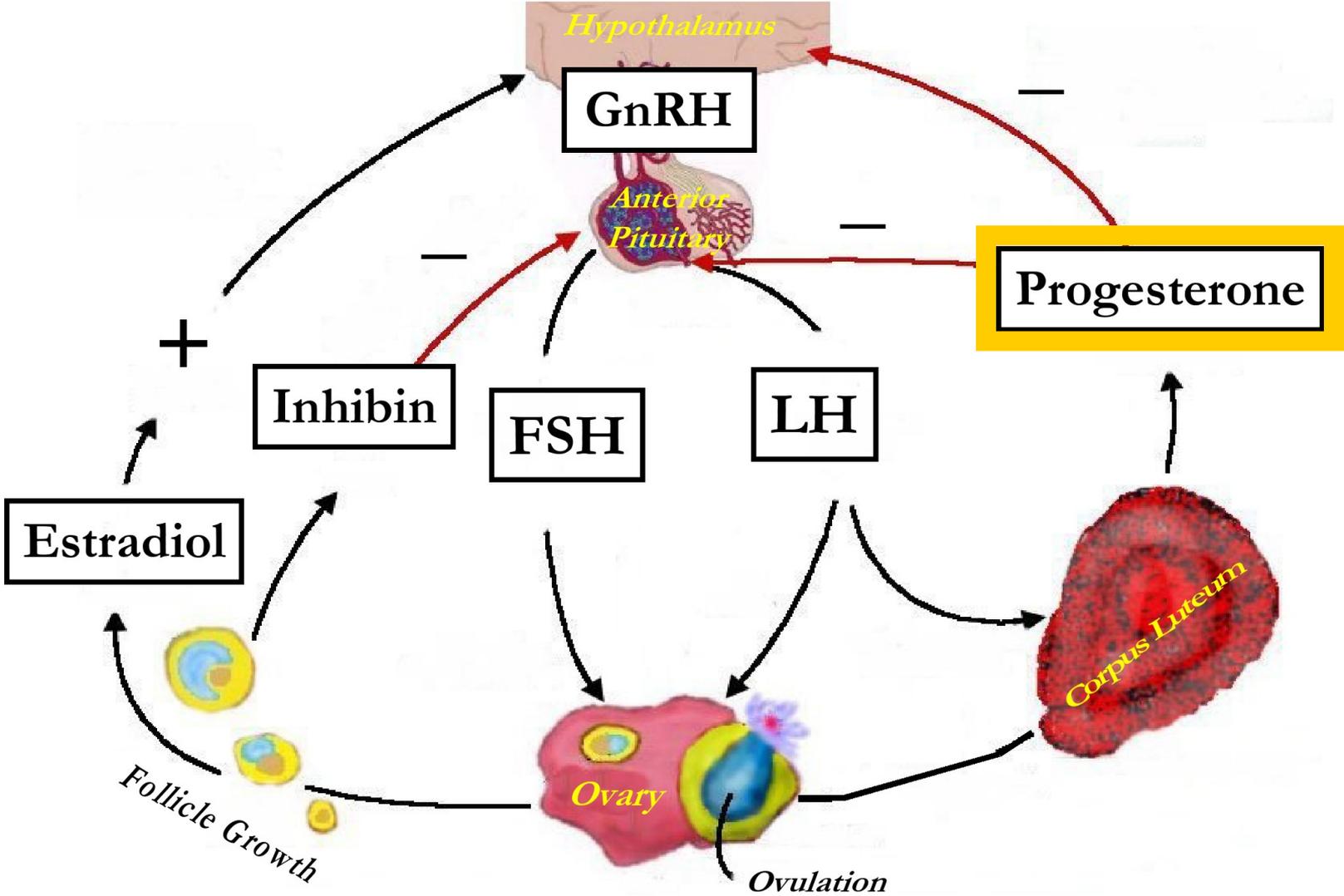
ARTIFICIAL

- **Treating a ewe with hormones that are normally seen during her reproductive cycle**

Endocrine Control of Estrous Cycle in the Ewe

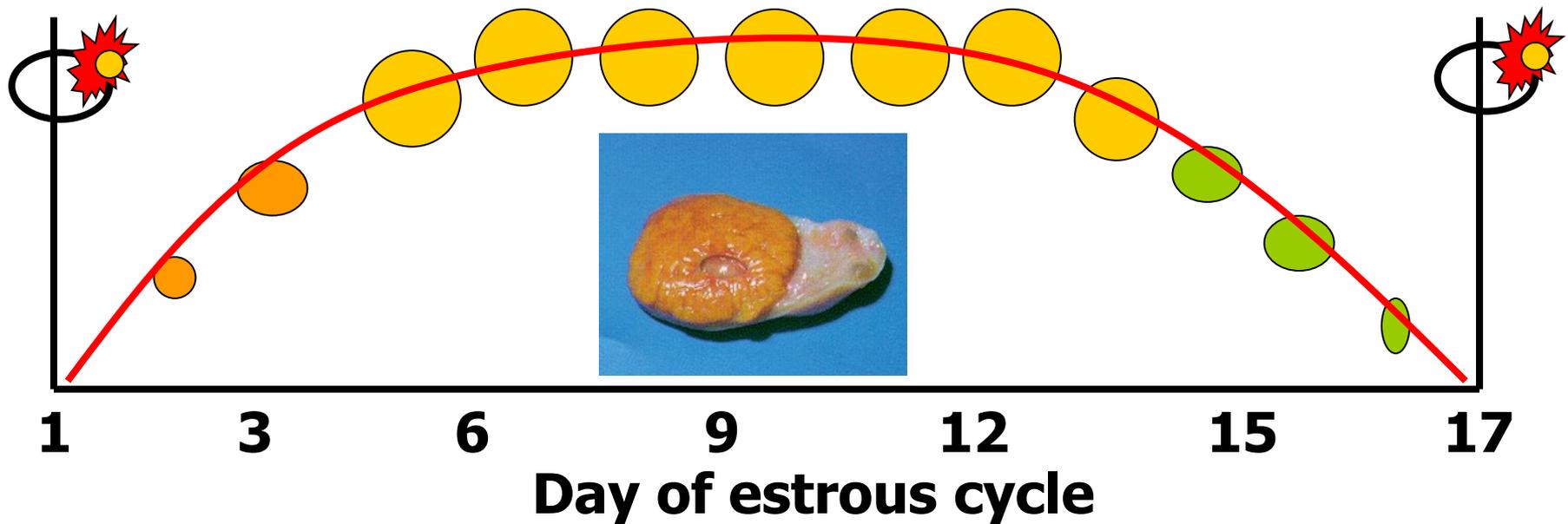


Endocrine Control of Estrous Cycle in the Ewe



Progestins: How they work

- Progesterone is produced by the Corpus Luteum (CL)
- CL grows and shrinks producing more and less Progesterone
- Decreasing levels of Progesterone stimulate ovulation

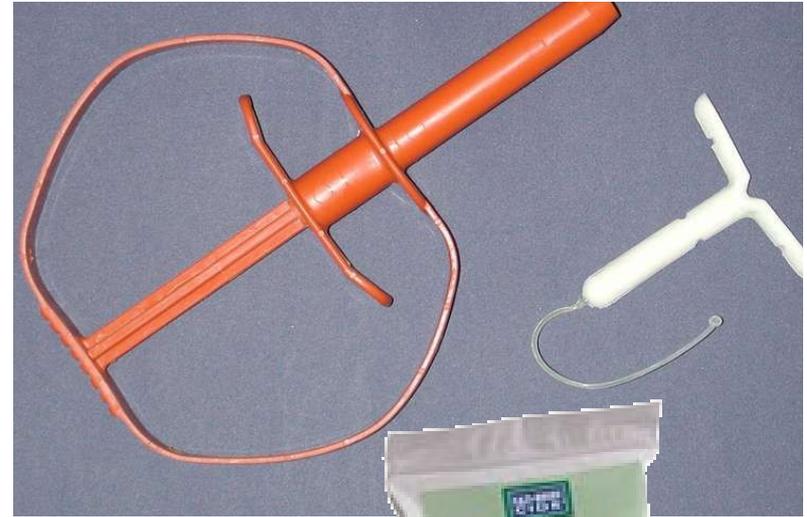


Artificial Techniques

- **Progestins (active ingredient: P4 or synthetic P4)**
 - **Controlled Internal Drug Release (CIDR™) – Vaginal insert**
 - **Melengestrol Acetate (MGA™) – Oral (Feed additive)**

Progestins

- **CIDRS:**
 - **Inserted Vaginally**
 - **Contains 300mg of P_4**
 - **Cost of \$7.50/ewe**
 - **Pregnancy Rate of 75% - 95%**



CIDR™

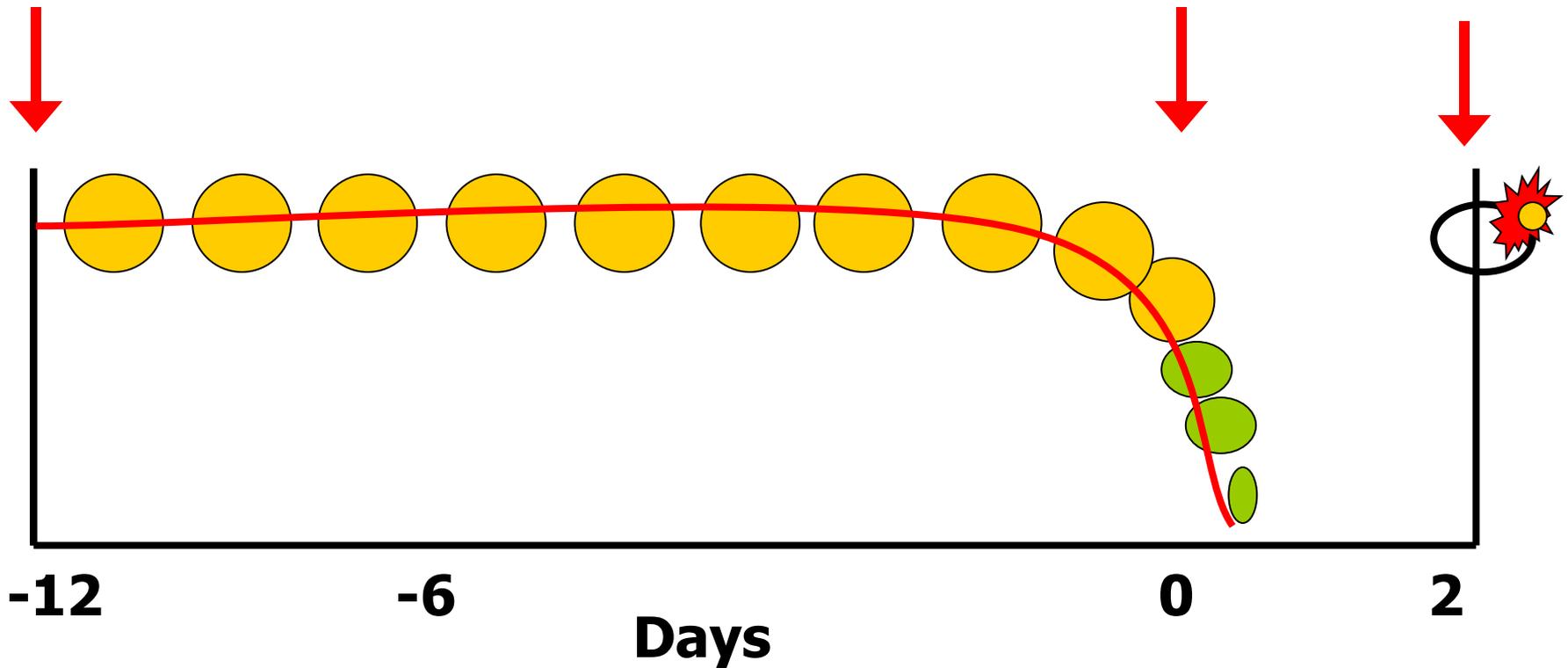


Progestins: CIDR

Insert CIDR
on day -12

Remove CIDR
on day 0

Heat in
1-2 days



Progestins

- **MGA**
 - Feed to ewe twice a day
 - Total of **0.3mg/ewe/day**
 - Cost very inexpensive/ewe/day
 - Pregnancy Rate of **40% - 60%**

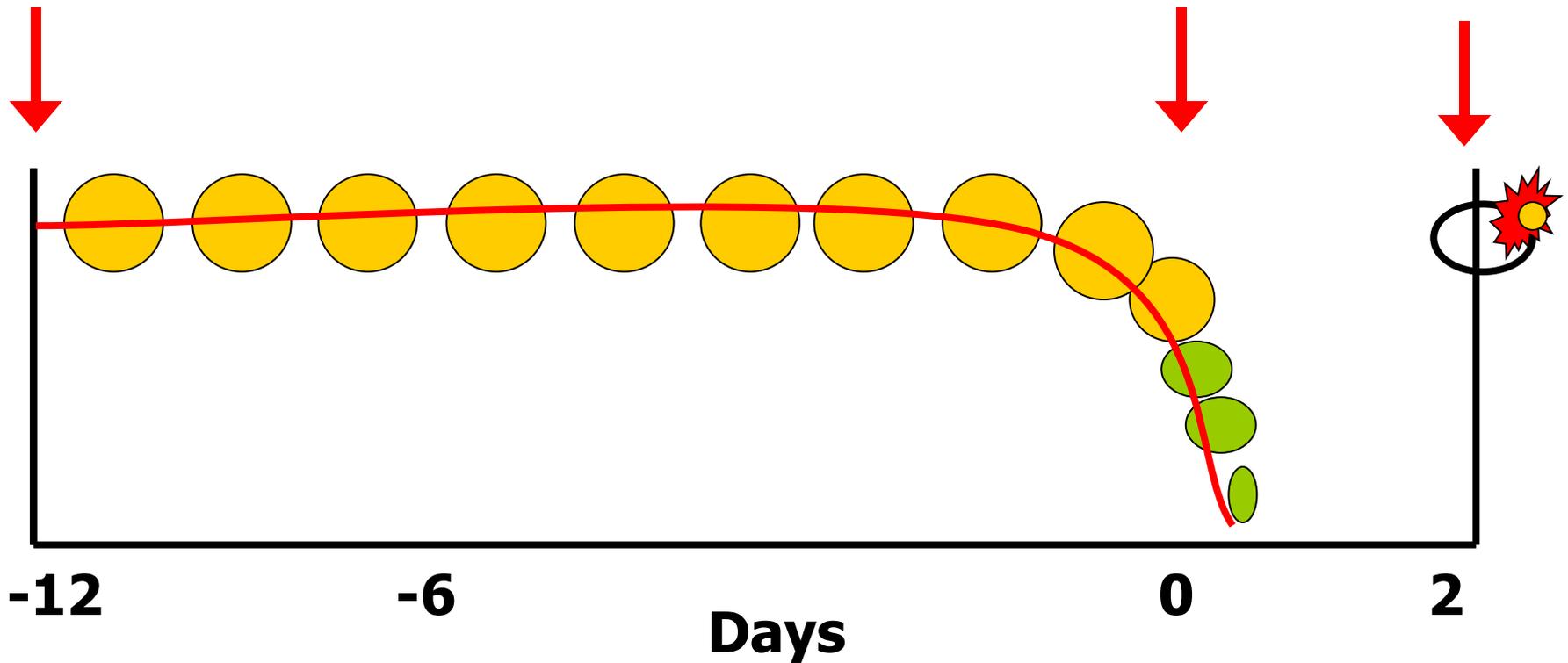


Progestins: MGA

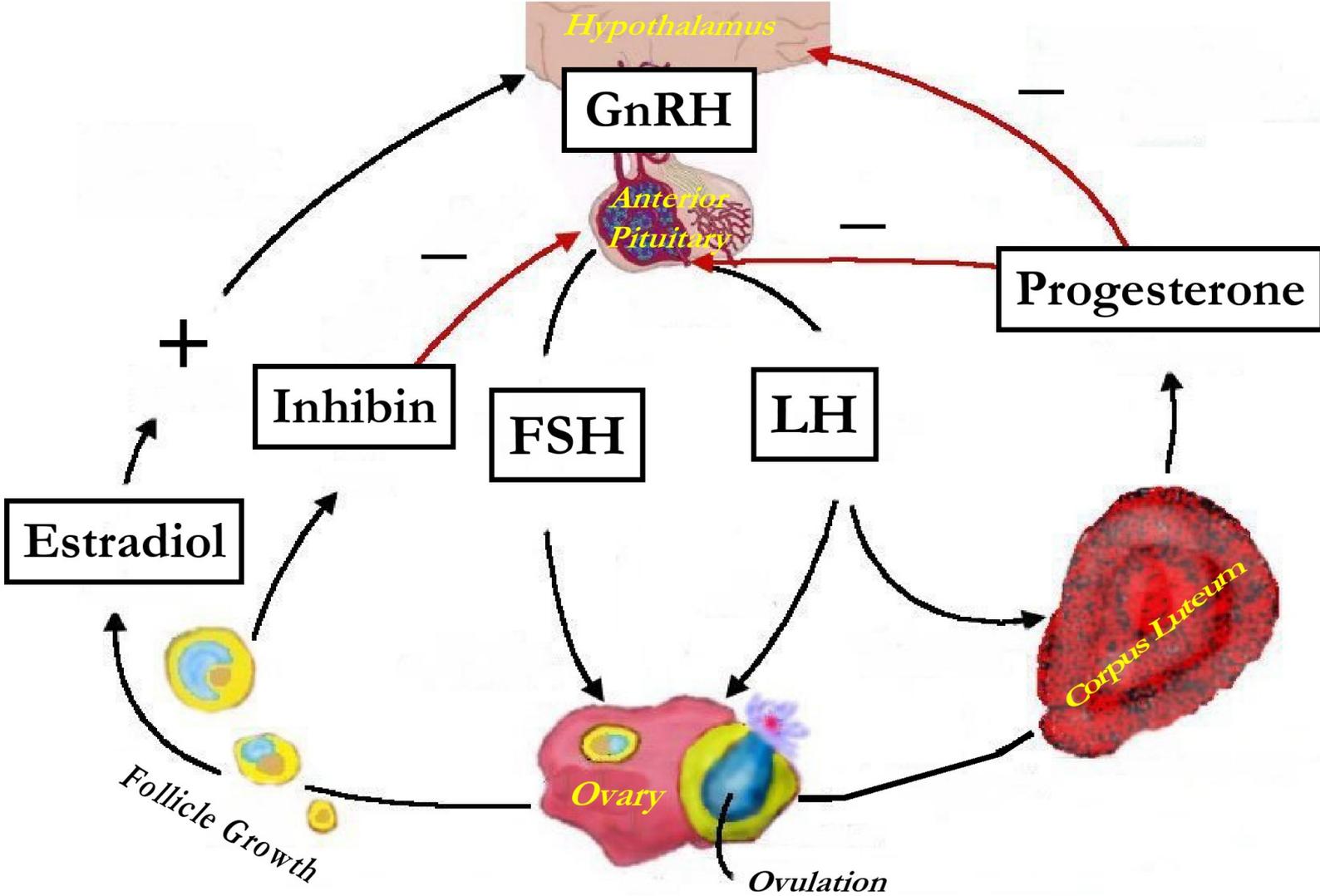
Start feeding
MGA on day -12

Stop feeding
MGA on day 0

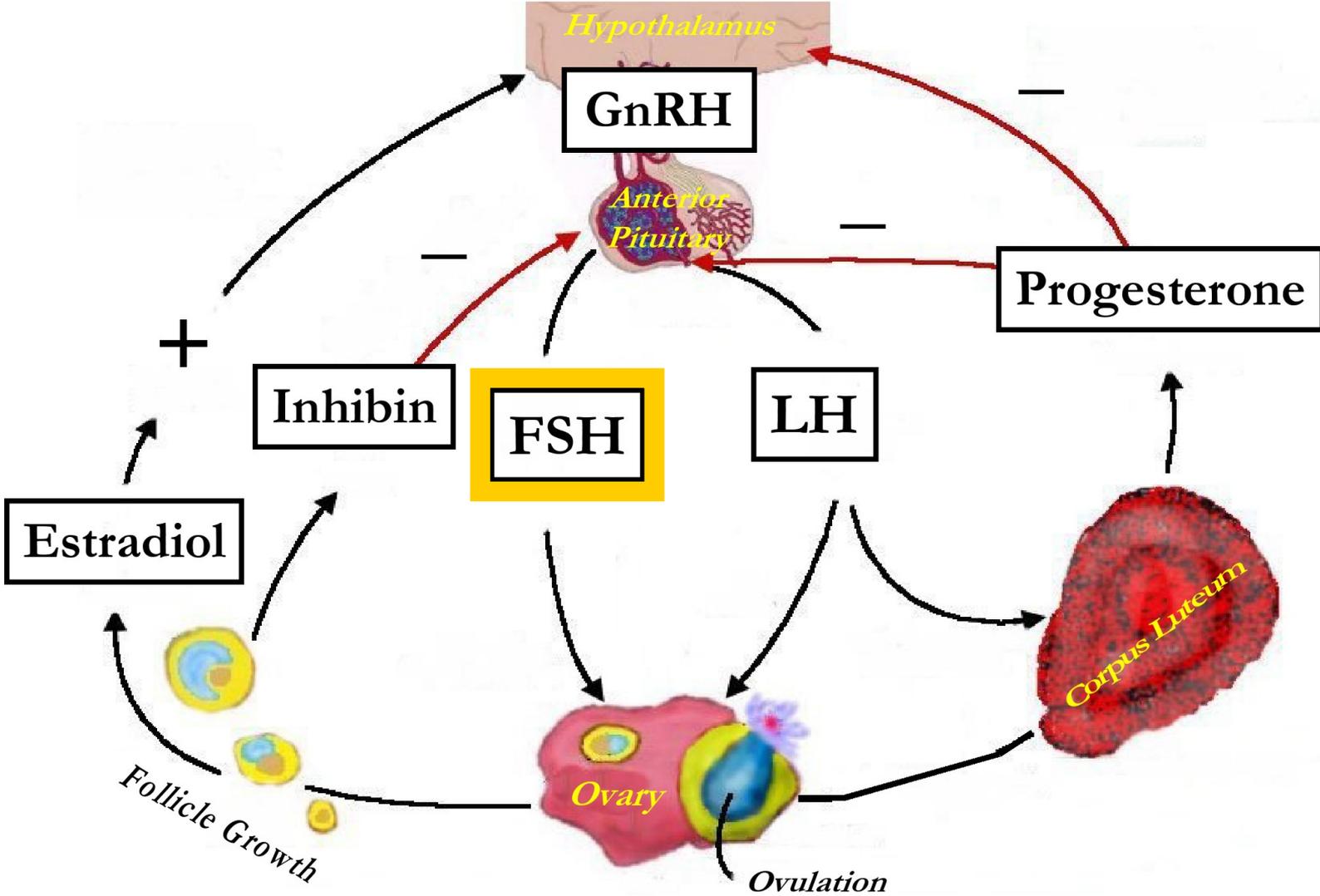
Heat in
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Endocrine Control of Estrous Cycle in the Ewe

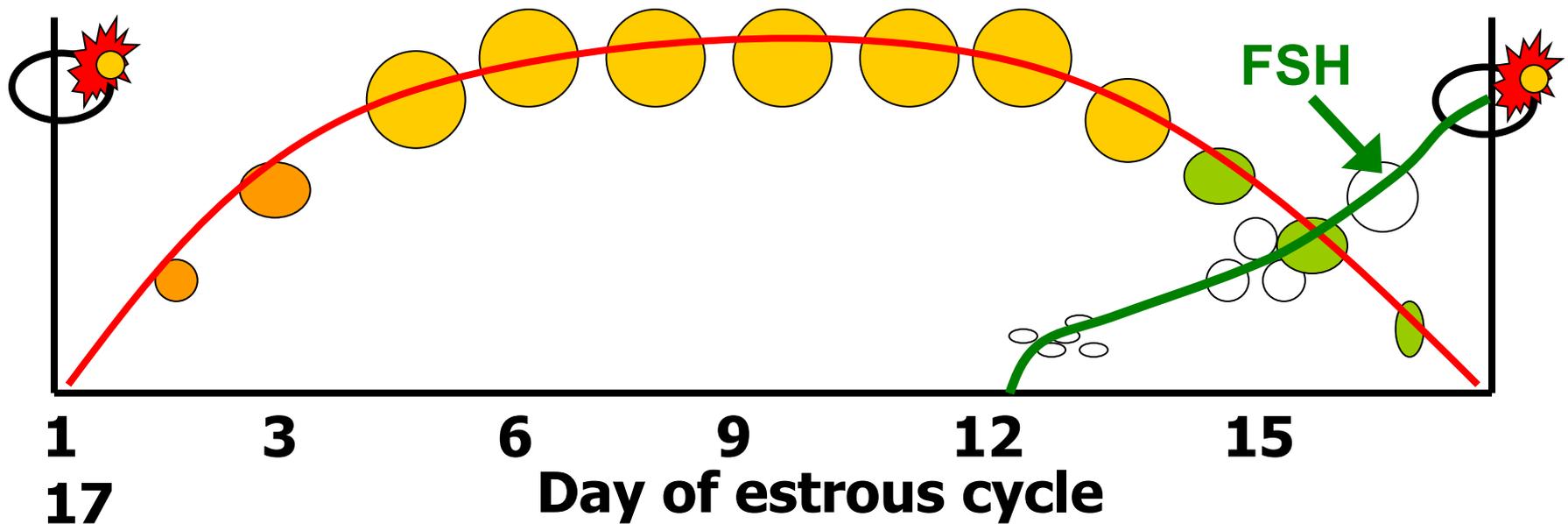


Endocrine Control of Estrous Cycle in the Ewe



Gonadotropins: How they work

- Follicle stimulating hormone (FSH) stimulates the growth of follicles so eggs can be shed during ovulation.



Artificial Techniques

- **Gonadotropins:**
 - **Increase # lambs born/ewe by stimulating follicle development to release more eggs at ovulation**
 - **Increase synchronization of ovulation, which helps to shorten duration of the lambing season**

Gonadotropins

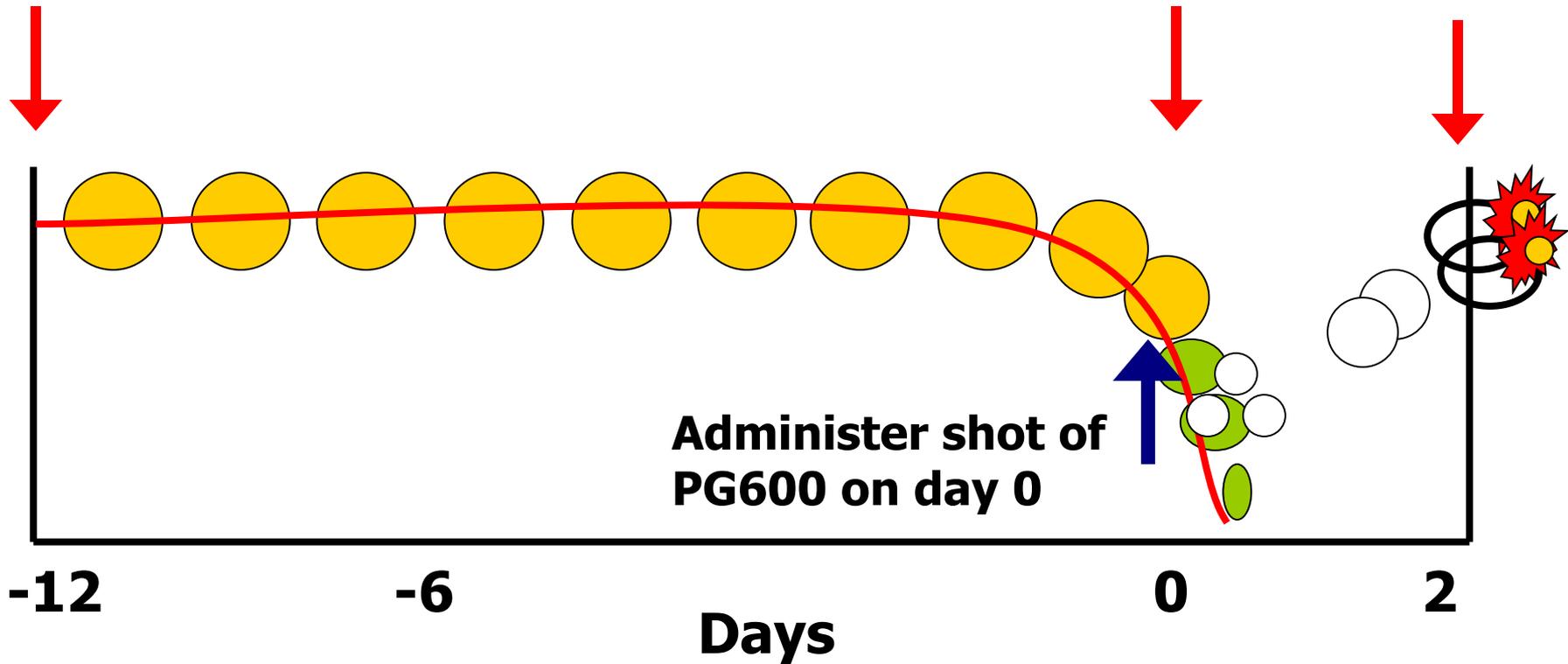
- **PG600**
 - Mimics the actions of FSH
 - Administer one shot at time of removal of CIDRs or MGA
 - 5ml dose (400IU PMSG)
 - \$5/dose
 - Pregnancy rate when used with CIDRs of 85% - 95% out of season

Gonadotropin: PG600 (with CIDRs)

Insert CIDR
on day -12

Remove CIDR
on day 0

Heat in
1-2 days



Artificial Techniques

- **Advantages**

- **Effective at increasing pregnancy rates out of season**
- **MGA is cost efficient**
- **PG600 is efficient at increasing the # of lambs/ewe**
- **Ability to synchronize lambing for better management of time**

- **Disadvantages**

- **More costs than natural methods**
- **Time consuming –**
 - **feeding MGA twice daily**
 - **inserting CIDRs**
 - **injecting PG600**
- **CIDRs have limited availability, FDA is working on approval**

Summary

- **Overcoming seasonality of the ewe:**
 - can enhance profitability of the producer
 - but it does require time, strict management and some initial costs

