

# Characterization of the reproductive seasonality of Florida Native sheep ewes

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## Introduction

The Florida Native sheep (FNS) is recognized primarily due to their natural adaptation to harsh parasitic and environmental conditions which allows them to thrive on minimal input from producers. FNS have been found to possess genetic resistance to gastrointestinal parasitism when compared with other breeds. In general, sheep profitable production requires effective reproductive management which in turn relies on a thorough characterization of key physiological reproductive parameters of the breed. Effective reproductive management will also aid in the conservation and propagation of this endangered native Florida breed. Nonetheless, in the scientific literature, there is a lack of information regarding FNS reproductive characteristics. The present study aims to establish FNS female reproductive seasonality and age to puberty to improve production and management practices as well as contribute to long-term genetic improvement and preservation of the FNS breed.

## Materials and methods

Animals were selected randomly from the University of Florida (29.6°N, 82.3°W) herd and continued under normal management practices (in pasture with daily supplementation and minerals and water ad libitum) through the duration of the study. To assess the onset of cyclicity, weekly blood samples were collected from adult (2-7 y/o) FNS ewes (n = 24) from June to September of 2021. To determine female pubertal age, blood samples were collected from spring-born (2021) FNS ewe lambs (n = 12) from 6 months of age until seasonal anestrus was reached. Blood samples were obtained by jugular venipuncture, centrifuged to obtain serum, and stored at -20C until assayed for progesterone (P4) concentration using a commercially competitive chemiluminescent enzyme immunoassay (Immulite® 2000 XPi Immunoassay System)

## Results

A luteal phase is defined as a plasma profile showing  $\geq 1$  ng/mL of progesterone indicating ovulation allowing us to evaluate the percentage of ewes that are cycling at each sampling time (weekly). The beginning of the breeding season was established when 50% of ewes had started to cycle. In the present study, 12.5% of the mature ewes were cycling the last week of June and 70.8% had cycled by the first week of July indicating the beginning of the breeding season. By the first week of August, 100% of the ewes had cycled at least one time. In the ewe lambs, the average age to reach puberty (indicated by a luteal phase) was 8 months with a median of 9 m, a minimum of 6 m, and a maximum of 10 m. By mid-October, 50% of the ewe lambs had started cycling and 100% by November. Nevertheless, by December 20, 59% of the animals had stopped cycling and by January 10 all the females were in anestrus.

## Significance

Despite being considered a “tropical breed,” Florida Native sheep are influenced by photoperiod in the present conditions and display moderate reproductive seasonality reflected through an anovulatory period from January to June and a cycling (breeding) season that extends from July to December. Puberty in FNS ewe lambs is reached at a later age compared with other temper breeds although this could be associated with the time of the year when they were born and future studies to assess age to puberty in relation with season are granted. These results provide critical missing information on the reproductive physiology of FNS that will aid in the conservation of this breed and facilitate the implementation of reproductive management strategies to accelerate the beginning of the breeding season and enhance pregnancy in yearlings.

