In Utero Development of Nigerian Dwarf Dairy Goats
Nicole Kluenker, Candidate for B.S. Biology, CSU Stanislaus

Definitions

Caddaledons: “C” shaped structures which run the uterus beginning at 28 days post conception.

CAE: Caprine Arthritis Encephalitis, a debilitating disease in goats which causes immune joint pain and eventually death

CL: A disease present in both sheep and goats which causes internal and external abscesses filled with smooth white pus

Surgical Ultrasound: Ultrasound with a probe inserted vaginally for accurate measurement of fetal age

Background

Nigerian Dwarf Dairy Goats are the only miniature breed of dairy goats recognized by the American Dairy Goat Association. They are 18-22” tall at the shoulder when they reach adult size. Pregnancy length for all breeds of goats is 145-155 days. Diagnoses of pregnancy in the larger breeds of goats can be performed by ultrasound.

In general, it is known that the gestational period for a goat is 145-155 days, or about five months. We also know that certain markers of pregnancy appear at certain day counts and are not visible beyond a certain day count due to a variety of factors. These structures include caddaledons, fetal bone structure, the amniotic sac, and fetal heart beat. Features appearing for a short window in the pregnancy include fetal sex, and number of fetuses present. For the larger dairy goat breeds and for those goats such as Boers used for meat we can estimate gestational age using such measurements as CRL (crown rump length), CL (crown length) and a general area taken up by a single fetus in its sac. However, these studies do not address in the uterus growth for the dwarf breed of Nigerian goats which are vastly different in other areas of medical importance and are increasing in popularity. This warrants closer, more specific study on this breed as the results will be of increasing use in the years to come, particularly with relation to urban agriculture settings and the farm to table movement.

Introduction:

The issue at hand is to determine the growth rate of Nigerian dwarf goats while in utero so that fetal measurements can be used to diagnose fetal age for purposes of pregnancy detection, care of dam and accurate treatment regimens dependent on fetal age. This is an important area for the goat industry/vegetarian medicine as nothing is known of the growth rates for this particular breed, which is becoming more widespread in the dairy goat show community and as backyard/durban agriculture settings. The ability to determine gestational age of fetuses via fetal measurements is an excellent aid to veterinarians when advising clients on how best to care for does and the fetuses they carry.

Methods:

Five Nigerian Dwarf Dairy Goats will be bred at the same time and then scanned with ultrasound every 2 weeks.

Data will be collected by use of a transabdominal probe style ultrasound using human grade lubricant via the surgically clipped right flank/sacral flank area of back exposed Nigerian dwarf dairy goats in a bikini style. This method is chosen to reduce animal stress, time needed to obtain measurements, and ease of use for personnel. A selection of does which have had their ovulation cycles synchronized will be used, they will be from the same herd, receiving the same feeds in the same conditions over the course of the study. After the study they will be returned to their lives as show goats and family milkers, where they will be treated according to industry best practices for the remainder of their natural lives, barring such an instance as they are sold to another appropriate home or must be euthanized to ill, disease or injury which cannot be reasonably treated with the help of a veterinarian.

Results will be analyzed with the use of graphs, data tables, standard deviation and normal distribution. An extreme outlier would disconfirm my hypothesis that the growth rate would be shown to be inconsistent among does in study group. All other options would confirm my hypothesis.

Results

The expected results are a linear growth of the fetuses while in utero in several different areas such as crown rump length and amount of area covered by body.

Discussion

These results can be used to predict how many days pregnant each doe is and give her proper care to ensure the health of her kids. This will also be useful when you need to have a human present at the birth. This will lead to lower doe and kid mortality and better disease prevention.

Significance

This study will lead to better medical care and management of the agnain dwarf goat, allowing them to be more productive over their lifespan and produce a higher yield of viable kids per doe at a lower cost per head. It will also lead to higher quality of life for does (known pregnant does are not stressed by unnecessary restraint) and a lower kid mortality as known days had given a due date, thereby allowing a human to be present at parturition at a higher frequency than if due dates is not known. This leads to better disease prevention, namely CAE and CL prevention protocols where kids must be removed from dams at time of birth to decrease the risk of transmission via infected colostrum.

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Contact information: nkluenker@csustan.edu