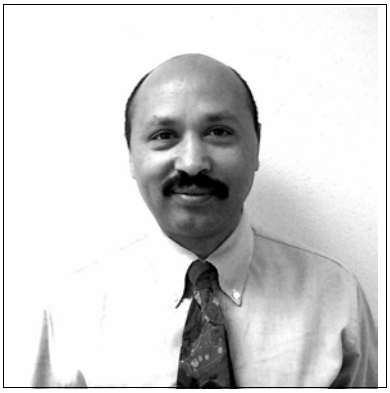
E. (Kika) de la Garza Institute for Goat Research • OKLAHOMA •

Goat Newsletter

Cooperative Extension Program
Langston University

The Newsletter of the E. (Kika) de la Garza Institute for Goat Research *Winter 2001*

From the Director's Desk



Dr. Tilahun Sahlu

Regardless of the declining temperature as we move into the winter, our research/extension program continues to run in high gear. For research, we always work in the past, present, and future, preparing reports on experiments recently conducted, performing experiments now underway, and developing funding proposals for possible inquiries to come. For the sake of brevity, experiments mentioned in the last newsletter will not be listed. Rather, some of the studies and activities in progress or planned to commence before the next newsletter will be highlighted. First, Dr. **Ignacio Tovar-Luna**, a faculty member of the University of Chapingo in central Mexico, just joined us and is in the thick of a trial to determine maintenance energy requirements of Spanish, Alpine, Angora, and Boer goats, along with help from Dr. **Ryszard Puchala** and Mr. **Glenn Detweiler**. Dr. **Ignatius Nsahlai** and Dr. **Jun Luo** are proceeding with their evaluation of goat nutrient requirements based on a large set of compiled data. Plans are being made by Dr. **Steve Hart** and Dr. **B. R. Min** for another year of testing different forages and forage systems for optimal and sustainable dairy goat production. Also, there are hopes to conduct a pilot experiment with training or adapting goats for high later consumption of cedar foliage. The Research Farm Manager, Mr. **Erick Loetz**, incorporated the scrutiny of different management practices into this year's artificial insemination effort with the Alpine herd. Fencing activities for the project "Use of Goats for Vegetation Management in Grazing Lands" is now in full swing, with major input from Dr. **Hart**, Mr. **Henry Stevenson, Jr.**, Mr. **Detweiler**, and Dr. **Goetsch**. For our international projects, there has been a flurry of happenings in the last few months. For example, Drs. **Tilahun Sahlu** and **Goetsch** traveled to Cyprus in October to meet with participants on the project "Multinational Approaches to Enhance Goat Production in the Middle East."

Also, Drs. **Roger Merkel** and **Terry Gipson** traveled to Ethiopia to visit our collaborators at two Ethiopian universities and to establish a computer laboratory for faculty and students at one of the universities. On page 6 and 7 of this newsletter, you will find a detailed report of their Ethiopian trip.

As for extension activities, the fall is a busy time for our artificial insemination workshops. This year, Drs. **Lionel Dawson** and **Terry Gipson** conducted two AI workshops, one at Langston and the other in Tahlequah. For both workshops, the maximum number of participants was realized, indicating a high interest in this type of extension activity among producers.

In the Spring 2002 newsletter, we will publish a schedule of our 2002 extension activities. Please look for it.

Goat Newsletter is published quarterly by the Cooperative Extension Service of the E. (Kika) de la Garza Institute for Goat Research, Langston University, Langston, Oklahoma.

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Meet the Faculty & Staff

Mr. Erick Loetz

Erick was born in Caracas, Venezuela but has spent most of his youth in the High Andes city of La Paz, Bolivia. He graduated from California Polytechnic State University (San Luis Obispo, CA) where he earned a B.S. in Animal Science.

During the 1980's Erick worked in Logan for the Utah State University Dairy where he furthered his education by being involved in a one-year technical degree program offered by Utah State University and the Bridgerland Vo/Tech-dealing with dairy farm operations and herdsmanship. He then went on to obtain a M.S. in Reproductive Management at Utah State University.

On his return to South America, Erick worked privately on his farm with forestry (eucalyptus and pine) and livestock (swine and cattle) enterprises. He also served as university faculty in various local Bolivian universities where he taught undergraduate level courses.

Erick again became involved with graduate work at the School of Medicine of La Paz where he received a M.S. in Biological and Biomedical Sciences working in the area of Cytogenetics. Erick's most recent job in Bolivia was as Head of the Population Genetics Unit at the Genetics Institute of the School of Medicine of the "Universidad Mayor de San Andrés" where he taught graduate level courses in Biostatistics and Genetics. Academically, Erick has also participated in more than 12 international graduate level short courses.

On his return to the U.S. Erick has worked as a Bakery Manager in Lyons, CO and is once again with the Institute's team as Research Farm Operations Manager (Erick had previously worked for the Institute in the late 80'S). Besides his management duties Erick plans to be involved in goat population genetics and reproductive biotechnology with AI and embryo transfer.

His wife Carola and his two 5-year old sons, Aramis and Amaru, have joined Erick in Oklahoma. Apart from Erick's dedication to his job he enjoys reading, music, playing racquetball and boating.

Mr. Erick Loetz can be reached at (405)466-3160 or at eloetz@luresext.edu.

Mastitis Workshop

by G. Tomita

The 1st annual Mastitis Workshop is scheduled to be held on Saturday, May 25, 2002, at the E (Kika) de la Garza Institute for Goat Research dairy facility. The workshop will consist of a comprehensive lecture on mastitis in the morning session and a hands-on laboratory course in the afternoon session.

In the morning session, Dr. Grant M. Tomita, a mastitis researcher at the Institute, will start off the program with a seminar on the cause, prevention, and management of mastitis in dairy goats. The pathogenesis of the disease as well as management strategies to prevent mastitis and treatment options in the event of intramammary infection will be covered in the presentation. Dr. Tomita's seminar will be followed by a presentation given by Dr. Max J. Paape of the United States Department of Agriculture, Immunology and Disease Resistance Laboratory, located in Beltsville, Maryland. Dr. Paape is a nationally and internationally recognized expert in the area of milk somatic cell function and mastitis. The role of milk somatic cells during mastitis and the effect of increased somatic cell count on milk quality will be discussed by Dr. Paape. This session will provide participants a basic knowledge of mastitis and an understanding of how to prevent and treat this disease.

In the afternoon session of the workshop, Drs. Tomita and Paape will conduct a laboratory course on the detection and diagnosis of mastitis. Participants in this session will be instructed on various techniques that are utilized to collect milk samples for the observation of mastitis and the identification of mastitis pathogens. Live dairy goats will be utilized for all demonstrations and by workshop attendees. This session will provide the participant hands-on experience in determining the udder health of lactating goats.

The registration deadline is April 27, 2002.

Please use the enclosed form to register for the Mastitis Workshop.

Goat Management Tips - Diseases

Abortion Diseases *by Lionel Dawson, D.V.M.*

Abortions can account for significant economic losses to the goat producer, however, the impact is often unrecognized unless a severe outbreak occurs. Most abortions in goats, especially those of an infectious nature, occur in the last 50 days of the gestation period. Common infectious causes of abortion are Toxoplasmosis, Chlamydiosis, Salmonellosis, Brucellosis, Listeriosis, Leptospirosis and Q-Fever. Proper samples should be submitted to get a definitive diagnosis in an abortion outbreak caused by an infectious agent.

<u>Abortion Diagnosis</u>

A reliable rapid laboratory diagnosis of abortion depends on the correct selection, processing, storage and shipment of specimens. In addition, a comprehensive herd history and history of the abortion outbreak should be submitted with the specimens.

1. Placenta – Include cotyledon and intercotyledonary areas: Select areas of placenta that appear to be abnormal. Both fresh and formalin fixed samples should be submitted.

2. Fresh whole fetus chilled but not frozen is first choice when rapid delivery (within 48 hours) is possible, to the laboratory.

3. When a whole fetus cannot be submitted fresh and formalin fixed.
   a. Fetal liver
   b. Fetal lung
   c. Fetal abomasums and contents (fresh only)
   d. Fetal heart blood
   e. Fetal pleural and peritoneal fluid
   f. Fetal brain

4. Serum separated from the clot and frozen (collected from the doe).

5. Frozen tissue is usually suitable for virus and most bacteriological examinations but not for histopathology examination.
6. Fresh tissue for bacteriological examinations should be packaged individually in sterile sealed containers and chilled.

7. Blood for virus isolation should be in Na-Heparin tubes and chilled ASAP

The following table discusses the infectious causes of abortions: (This is a partial table; other abortion diseases will be tabulated in the next newsletter.)

Disease	Transmission	Clinical Features	Diagnosis	Diagnostic Aids	Control
1. **Toxoplasmosis:** Toxoplasma gondii affects a wide range of animals as well as man. It is widespread and has been reported in Australia, New Zealand, Britain, Turkey, USSR, and North America. Cats and other Felidae are considered the primary host and excrete oocysts; species such as goats and man are regarded as secondary hosts.	Oocysts excreted in cat feces are thought to provide the major source of infection. Congenital transmission from does to kids is also established. Further epidemiologic knowledge is required to establish how the disease spreads during an epidemic.	Does infected in the earlier stages of pregnancy either resorb the embryo, or fetal death and under go mummification (often only one of a twin pair) may occur. Infection in late pregnancy leads to abortion and perinatal losses of kids. Many congenitally affected kids survive. Disease in the adult is generally asymptomatic, occasionally CNS signs develop.	Gross lesions of the cotyledons (numerous grey-white foci 1 to 3 mm in diameter) are indicative of the disease. Not all cotyledons are equally affected, and such lesions should be differentiated from non-specific calcification. Focal leukoencephalomalacia in the CNS of stillborn kids, or kids dying shortly after birth is a common finding.	Histology of cotyledon to demonstrate local areas of necrosis and the organisms. Histology of fetal brain to demonstrate foci of glial cells and leukoencephalomalacia. A range of serologic tests has been developed by different laboratories to assist with diagnosis of this disease.	Prevent exposure to barn cats. Don't allow cats to consume aborted fetuses in a Toxoplasma abortion.
2. **Enzootic Abortion** (EAE, Chlamydial Abortion): This is caused by a Chlamydial agent that affects sheep, goats, occasionally cattle and rarely man. Abortion-producing strains differ antigenically from strains producing polyarthritis (sheep and cattle) and conjunctivitis in sheep and goats (pinkeye). The disease appears to be of greatest importance in Britain, Europe and the western United States.	Ingestion by does during the kidding period following contamination of food and surroundings by aborted fetuses, placentae and vaginal discharge are the routes of transmission. Spread is more rapid when does are confined. Many carriers are seen in endemic herds. Infection at birth in kids kept as replacement does may be carriers through to their first pregnancy.	Late abortions, stillbirths and birth of weak infected progeny are the main features. Fetal mummification is occasionally seen. Kids with congenital infections usually abort during their first pregnancy; does infected in the last month of pregnancy may not abort until the next gestation period. Does seldom abort more than once.	A chorionitis with chlorionic epithelial cells packed with elementary bodies appears to be the essential lesion.	Placental smears and smears of vaginal discharge (but not fetal stomach) stained by the modified Ziehl-Nielsen or Gimenez stain techinique should be done. Organisms can be cultured in yolk sac of embryonating chicken eggs. CF tests may also be used.	Vaccine available; must be given to males and females 4-6 weeks prior to breeding, or use 150 mg of tetracyclines per head per day in the feed for 2-3 weeks prior to breeding: may continue this in their feed through the first half of gestation.
3. **Salmonellosis** (Paratyphoid Abortion): *Salmonella abortus ovis, S. typhimurium and S. dublin* has been associated with abortion in does.	Ingestion of contaminated food and water usually from carrier animals. Does in later pregnancy appear more susceptible. Overcrowding and other forms of stress favor an outbreak. Unless the infecting dose is large or the strain exceptionally virulent, infection seldom causes clinical disease in the absence of some other predisposing factors resulting in stress.	Abortions, stillbirths, births of weak infected progeny that usually die within 7 days of birth. Does may show high fever before aborting; most recover, but some die from metritis and/or septicemia. Some does and newborn kids show diarrhea; in the kids this is usually fatal. When infection is endemic, abortions tend to be confined to the younger does.	No specific placental lesions have been reported. Aborted fetuses show usual signs of intrauterine death. Septicemia lesions may be seen in those kids dying during or shortly after birth.	Culture of organisms from fetus, placenta and uterine discharge.	Antibiotic treatment on flock basis not effective and is very expensive. Avoid overcrowding or stressing of does. Do not feed on the ground unless a new area can be used each day. For valuable individuals, supportive therapy (fluids) and antibiotics are recommended.

For more information regarding goat diseases, contact Dr. Lionel Dawson at (405) 744-8580 or at dlionel@okstate.edu

Research Spotlight

Abstracted by A. Goetsch

Feeding Programs for Dairy Goats.

Optimal feeding programs for dairy goats in late lactation and when dry are not well established. Dietary characteristics influence milk yield and body condition of dairy goats, as well as growth of primiparous goats. Objectives of this experiment were to determine effects of dietary concentrate and energy levels in late lactation and the dry phase on performance of Alpine yearling doelings and mature does in late lactation and the subsequent early lactation phase. The experiment consisted of 16 weeks in late lactation, 8 to 13 weeks dry, and 12 weeks in the subsequent lactation. Diets of 20, 35, 50, or 65% concentrate (2.18, 2.34, 2.49 and 2.62 Mcal/kg metabolizable energy [ME], respectively) were consumed free-choice in late lactation, with a 35% concentrate diet (2.18 Mcal/kg ME) in the first 4 weeks of the dry phase and 50% concentrate (2.65 Mcal/kg ME) until kidding. All goats consumed a 50% concentrate diet (2.42 Mcal/kg ME) in the subsequent early lactation. Yearling doelings and mature does differed in milk yield response to dietary concentrate and energy levels in late lactation, with no effect for doelings and increased milk yield for does as the concentrate level increased to 50% (2.49 Mcal/kg ME). Conversely, a 65% concentrate diet depressed milk yield in late lactation by does compared with 50% concentrate. Dietary concentrate level may have little effect on subsequent lactational performance with adequate nutritional planes in subsequent dry and early lactation phases, for both mature does and yearling doelings incurring significant growth.

A. L. Goetsch, G. Detweiler, T. Sahlu, R. Puchala, and L. J. Dawson. 2001. Dairy goat performance with different dietary concentrate levels in late lactation. Small Ruminant Research 41:117-235.

Dairy Replacement Management.

A concern of many goat producers is feeding management in the first few months of life for kids removed from does soon after birth. A number of factors may influence performance of kids artificially reared on milk or milk replacer. To study these factors, two sets of 40 Alpine kids (3 to 9 days of age) were used to determine effects of group versus individual pens, preweaning access to forage, and different milk feeding restriction regimens on preweaning and early postweaning growth. Treatments in the first experiment were: individual pens, 91 × 91 cm; two kids (one in the experiment and another older) per pen, 182 × 91 cm; group pen (with at least two older kids present), 2.43 × 1.22 m; and group pen plus free access to alfalfa hay. Treatments in the second experiment were: ad libitum milk intake with two meals in weeks 3-8, then 50% of intake on the preceding few days with one meal in week 9 to 10; 75% of intake on the last few days of week 2 with two meals in weeks 3-8, then 50% intake (67% of intake in weeks 3-8) with one meal in weeks 9-10; 75% intake with one meal in week 3-8, then 50% intake with one meal in weeks 9-10; and 75% intake with two meals in weeks 3-6, then 37.5% intake with one meal in weeks 7-10. In the first experiment, neither group pens nor providing access to forage preweaning enhanced growth of Alpine kids. Results of the second experiment indicate that milk consumption can be moderately restricted without impairment of growth in preweaning and early postweaning periods compared with ad libitum milk consumption. Furthermore, there appears potential for effective employment of regimens with only one daily meal of milk, although most appropriate restriction levels deserve further study. Lastly, a second step reduction in milk intake in the latter few weeks of the preweaning phase may be useful in further stimulating dry feed consumption.

A. L. Goetsch, G. Detweiler, T. Sahlu, and L. J. Dawson. 2001. Effects of different management practices on preweaning and early postweaning growth of Alpine kids. Small Ruminant Research 41:109-116.

GIGR Establishes Computer Laboratory for Awassa College of Agriculture in Ethiopia

by R. Merkel

Skill in using computers and the Internet are essential tools for faculty and students around the world. In November, Drs. Roger Merkel and Terry Gipson traveled to Ethiopia to assist the Awassa College of Agriculture (ACA) of Debub University in establishing a computer laboratory for the development of much-needed computer skills.

The establishment of an internal computer network incorporating a student computer laboratory will vastly improve computer facilities at ACA for use in research, teaching and extension activities. The student computer laboratory allows ACA students better access to computers and increases their opportunities to obtain computer skills. Presently, there are future plans to train senior students in basic computer skills. This training will be lead by Mr. Wondimagegn Mekuria, who will also be the administrator of the computer laboratory.

Dr. Girma Abebe is well pleased with the new computer lab.

The computer project also funded the procurement of multimedia equipment, i.e. digital camera, scanner, LCD projector and screen, etc. and called for the proper training to allow ACA faculty to use computers in the classroom. Dr. Gipson was the first to demonstrate the multimedia equipment when he gave a follow-up presentation on statistical analyses using Statistical Analysis System (SAS®) software. For the preliminary SAS presentation, Dr. Gipson used an overhead projector, technology already in use at ACA. For the follow-up SAS session, Dr. Gipson used the newly acquired laptop and LCD projector.

With the multimedia equipment, class presentations, homework assignments, pictures, and other class materials can be put into digital format and stored on a computer. Students could then have access to class material outside of normal class hours through using the student computer laboratory.

Another aspect of the use of multimedia is in the realm of extension activities. Extension personnel at Langston University regularly use a laptop computer and LCD projector at producer meetings. The use of this technology by scientists at Awassa represents a giant leap in the technology used in extension presentations. Through using digital technology, pictures of various production settings, training materials, etc. could be presented to villagers. A digital camera could be

Drs. Merkel (left) and Gipson configure the computer laboratory, while Mr. Wondimagegn prepares network cables.

used to capture pertinent training materials such as disease symptoms, types of forages and plants best suited for animal production, medicines used in treating diseases, vaccination methods, etc. for

Dr. Gipson conducts a follow-up SAS workshop at ACA using newly acquired multimedia equipment.

presentation. Combined with hands-on practice this would be a very strong and effective teaching tool. Two portable generators were also part of the computer project in order to supply power to villages where there is no electricity. This latter enhancement of delivery of the extension program will support the already existing project of women's goat groups.

The computer project was funded through a Technology Enhancement Grant from the United States Agency for International Development's (USAID) Leland Initiative and through a sustainability grant from the Association Liaison Office for University Cooperation in Development. The USAID Mission in Addis Ababa, Ethiopia provided essential assistance and support.

In addition to establishing the computer laboratory, Drs. Merkel and Gipson were able to travel to several villages south of ACA and discuss the goat project with women participants. During the past year, ACA has increased the number of women participants in the goat extension project to 80, doubling the original number of cooperators. Each woman initially received two does and production training. In a little over two years, one woman now has a herd of 11 goats and has goat milk to feed her infant son. Because of the importance of milk to families in the region, ACA is now providing Toggenburg crossbred bucks to villagers to upgrade the milk production potential of village goats.

Prior to arriving in Awassa, Drs. Merkel and Gipson traveled to Alemaya University (AU) in eastern Ethiopia, where Langston and AU have a similar women's goat project and met with several participants in that goat project. AU has plans to add 50 new women participants to their goat extension project, raising the total number of women to receive goats to 150. This project is very popular among village women and goats are used for milk production and for sale as meat animals, particularly during holiday and festival periods. Funding for the AU/Langston collaborative project is through the United Negro College Fund's Institutional Development Partnerships Activity and USAID. For more information on the Ethiopia projects, see the Spring 2001 and the Summer 2000 newsletters. For a detailed description of the women's goat projects at ACA and AU, visit our website at *http://www2.luresext.edu/goats/other/international.htm*.

For more information regarding the Ethiopian project, contact Dr. Roger Merkel at (405) 466-3836 or at rmerkel@luresext.edu

A participant in the women's goat project shows off her goats.

Noteworthy News

Langston University has been awarded a USDA Initiative for Future Agriculture and Food Systems grant. The project will develop a computer simulation model to evaluate resources and conditions for goat production systems. Dr. **Terry Gipson** will lead this project.

Drs. **Tilahun Sahlu** and **Art Goetsch** traveled to Cyprus to meet with collaborators of the MERC project.

Drs. **Roger Merkel** and **Terry Gipson** traveled to Ethiopia to visit our collaborators at two Ethiopian universities and to establish a computer laboratory for faculty and students at one of the universities.

Dr. **Ignacio Luna**, visiting scholar from Chapingo University in Mexico, arrived to assist with an ongoing project of determining energy requirements for goats.

Dr. **Bill Pomroy** returned to Massey University in New Zealand following his short-term sabbatical research on internal parasites in goats.

Dr. **Tumen Wuliji** completed his research stay and will be returning to New Zealand.

Drs. **Terry Gipson**, **Steve Hart**, and **Grant Tomita** traveled to Portland, OR to attend the 97th Annual American Dairy Goat Association convention. Dr. **Tomita** presented a paper entitled "Dairy Goats and Mastitis". Dr. **Hart** presented two papers entitled "Nutrition for the High Producing Doe" and "The Effects of Concentrates and Forage and Milk Production and Quality - Preliminary Results". Dr. **Gipson** assisted with the Dairy Herd Improvement Training.

Dr. **Steve Hart** spoke on the principles of goat nutrition and how they differ from feeding cattle at the Commonwealth Goat Seminar in Lexington, Kentucky.

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