ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

COOPERATIVE EXTENSION AND RESEARCH

(Langston University)

Reporting Period: October 1, 1999 - September 30, 2000

TABLE OF CONTENT

***Update to 5-Year Plan of Work (1999-2004)**

A. Planned Programs

National Goals

Goal 1

An agricultural system that is highly competitive in the global economy. Through research and education, empower the agricultural system with knowledge that will improve the competitiveness in domestic production, processing, and marketing.

Overview

Research and extension personnel at Langston University are contributing to making the U.S. Agricultural System highly competitive in a global economy. Research in goat nutrition is aimed at making goat production more productive through developing inexpensive yet high quality feed supplements. Through other efforts, Langston University extension specialists have sought to make agriculture more profitable for goat producers by conducting artificial insemination workshops. These workshops provide hands-on instruction for producers and allow them to introduce genetically superior lines into their goat herds that they would not normally have access to. Producers also save money by conducting their own herd inseminations. Langston University's Dairy Herd Improvement (DHI) Laboratory is yet another means of making agriculture more profitable for goat producers. The DHI Laboratory analyzes goat milk for quality based primarily on the milk's level of somatic cells and protein content. A favorable DHI designation can mean approximately a 25% or more increase in goat milk value when compared to undocumented milk.

An extension project is being conducted to improve both the health of goat herds and save goat producers money. Workshops have been conducted to teach goat producers how to control internal parasites. Parasite control in goats is the second highest production cost. Workshop sessions teach goat producers how, when and the correct dosages of anthelmintics to administer to their goat herds for internal parasite control.

Parasite control as well as many other components of animal production efficiency are shared with goat producers each year at our Annual Goat Field Day. The April 29, 2000 field day had 148 attendants from 10 states. Over 475 copies of the proceedings from that field day have been disseminated to the public.

An aquaculture project has been designed to help fish producers increase their profits through developing better fish food conversion rates and looking at alterative markets. Research at Langston University has shown that specific fish species can be gown in Oklahoma at reduced costs and sold for a profit without having to go through fish processors.

Total Expenditures by Funding Source: $1,522,104.00
Full-time Equivalents : 13.23

Key Theme - Agricultural Profitability (Research)

a. Researchers are developing new ways of satisfying goat nutritional needs resulting in increased production of goat meat, milk and mohair. These nutritional needs are being addressed while reducing production costs thus increasing the producer's profits. Inexpensive low-cost, low-quality forages provide a substantial proportion of the nutrients for goats and other ruminants in the United States. However, to achieve acceptable levels of animal performance, relatively costly supplemental feedstuffs are necessary. Researchers at Langston University are studying ways to inexpensively enhance low-quality forages through developing inexpensive forage supplements. These low-cost supplements will result in increased profits for goat producers.

b. **Impact -** Potential impact will include development of an inexpensive feed supplement for low-quality forages which will decrease production expenditures and increase profits for ruminant producers.

c. **Source of Federal Funds** - Evans-Allen.

d. **Scope of Impact** - Oklahoma and U.S.A.

Key Theme - Aquaculture (Research)

a. Aquaculture researchers are looking for ways to help fish farmers increase their profits from the fish industry. The Aquaculture Field Day attendance in 1999 was more than twice that of 1998. Researchers demonstrated that culture of third year (age 2+) channel catfish can result in large fish (3.28 lb) with a good conversion factor of 1.62 (54% of literature rate). Total feed cost for production of the large fish was $0.61 per fish. Researchers also demonstrated that channel catfish, bigmouth buffalo and grass carp could be sold live to the public at a profit.

b. **Impact** - Fish farmers were asking if large fish could be economically grown in Oklahoma. We demonstrated that they can be both grown inexpensively and sold for greater return through retail sales rather than reliance upon processor sales.

c. **Source of Federal Funds** - Evans-Allen.

d. **Scope of Impact** - Oklahoma

Key Theme - Agricultural Profitability (Extension)

a. The use of superior sires is imperative in improving the genetic composition of breeding stock. Artificial insemination has long been used in the dairy cattle industry and is a simple technology that goat producers can acquire. However, opportunities for goat producers to obtain the necessary skills via formal and practical instruction are not widespread. Langston University has instituted a practical workshop for instruction in artificial insemination in goats. Producers are instructed in the anatomy and physiology of the female goat, estrus detection and handling and storage of semen. Producers participate in a hands-on insemination exercise. An understanding of goat anatomy and physiology enable the producer to devise seasonal breeding plans and to troubleshoot problem breeders. An understanding of estrus detection enables the producer to effectively time inseminations for favorable conditions for conception and to efficiency utilize semen. An understanding of semen handling and storage enables the producer to safeguard goat semen supplies, which can be scarce and expensive. The experience of actually inseminating a female goat enables producers to practice the knowledge that they have gained.

b. **Impact -** Artificial Insemination workshops were conducted on the Langston University Campus and at the county fairgrounds in Tahlequah, Oklahoma. Thirty-two participants enrolled in the workshops. Twenty-seven (27) of 32 respondents rated the workshops as excellent. Thirty-one (31) of 32 respondents answered "***Yes***" to a survey which asked if the workshop met their expectations and satisfied the workshop objectives. The acquisition of these inseminating skills will allow producers the use of genetically superior sires in their goat herds that they normally would not have access to. This also allows producers to save money by conducting the inseminations themselves instead of hiring an inseminator.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Oklahoma.

Key Theme - Agricultural Profitability (Extension)

a. The Langston University Dairy Herd Improvement Laboratory analyzes milk for somatic cell counts. The somatic cell count is an indicator of udder health and can reveal early signs of mastitis. Milk with high levels of somatic cells is not allowed into the public milk supply. We also analyze milk for fat and protein. The milk that we analyze is sent to us from producers across the United States. We are the only lab that uses a goat milk standard to calibrate our equipment. After analyzing the milk we then use the figures to generate a report for our stakeholders. This report allows our producers to closely and accurately identify high producing animals. These producers then have documented production records for breeding and resale purposes. An animal that has received positive

documentation via the Dairy Herd Improvement Program has approximately a 25% increase in value over a similar animal without documentation.

b. **Impact** - Producers have stated how valuable the Dairy Herd Improvement (DHI) Laboratory's information has been to them. During last year's annual meeting, one producer stated how he used DHI information to increase milk protein in his goat herd.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Oklahoma; other U.S. Goat Producing States.

Key Theme - Animal Health (Extension)

a. Controlling internal parasites is the number two cost of production for goat producers. Many of the anthelmintics on the market are not labeled for goats and there is considerable confusion about effective control programs among goat producers. Goat producers tend to underdose or overuse anthelmintics; both hasten anthelmintic resistance. Langston University initiated a "Sustainable Internal Parasite Control" workshop to help goat producers develop a sustainable control program for internal parasites. During the workshops, goat producers learn about the life cycles of the most common and the most pathogenic parasites, various families of anthelmintics, correct dosage, dosing procedures, how to collect fecal samples and how to conduct fecal egg counts. On 6/3/00, a workshop was held at Langston University. An understanding of life cycles enables the goat producer to devise seasonal control strategies. An understanding of anthelmintics enables the goat producer to rotate anthelmintics for more efficacious control and to follow withdrawal times. An understanding of correct dosage and dosing procedures enables the goat producer to administer anthelmintics to achieve optimal efficacy.

b. **Impact** - Seven participants attended the workshop. 100% rated the workshop as "excellent" and stated that it met their objectives for attending the workshop. The ability to conduct fecal egg counts allows producers to deworm their goats on an as-needed basis instead of on a calendar or some other equally unreliable basis. A decrease of just one deworming will save the goat producer $1.20 per goat, slow anthelmintic resistance and better ensure a wholesome product. For a veterinarian to conduct a fecal egg count will cost between $6 and $10 per animal. Producers are able to conduct fecal egg counts themselves at a cost of $0.25 per animal.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Oklahoma.

Key Theme - Animal Production Efficiency (Extension)

a. Goat production is an evolving livestock enterprise in the United States. Scant information exists for goat producers to make management decisions. Langston University has established the E (Kika) de la Garza Institute for Goat Research to conduct research in milk, fiber and meat production. The Institute established an annual field day to educate goat producers and to highlight and disseminate research findings of the Institute. The 15th annual Goat Field Day was held April 29, 2000 and the theme was *Goats in the Twenty-First Century.*

b. **Impact** - The Langston University 2000 Goat Field Day had 148 attendants from 10 states. Twenty-three (23) of 24 respondents said "***Yes***" the Goat Field Day met their expectations and their objectives for attending the Goat Field Day. Five hundred copies of the proceedings of the 15th Annual Goat Field Day were printed and over 475 copies have been disseminated either via the 15th Goat Field Day or later via telephone or e-mail requests.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Oklahoma; other U.S. Goat Producing States.

Goal 4

Greater harmony between agriculture and the environment. Enhance the quality of the environment through better understanding of and building on agriculture's and forestry's complex links with soil, water, air, and biotic resources.

Overview

Research and extension personnel at Langston University are contributing to achieve greater harmony between agriculture and the environment. Aquaculture scientists have demonstrated that water quality in ponds does not have to be sacrificed to improve fish production efficiency. Diffuser aeration systems have been studied to assess their help in maintaining dissolved oxygen in ponds.

Learning to appreciate the harmony and balance between agriculture and the environment needs to start at an early age. Extension specialists have developed school enrichment curriculums in aquatic environmental education. During the 1999-2000 school year, over 40 Oklahoma schools and an excess of 6,000 students were taught about water quality through this program. A number of Oklahoma schools has adopted components of this hands-on curriculum.

Total Expenditures by Funding Source: $161,434.00

Full-time Equivalents: 2.75

Key Theme - Water Quality (Research)

a. Aquaculture researchers demonstrated that improved fish production efficiency can also result in improved water quality in culture ponds. Fish production efficiency was obtained by high production (5,176 lb/a; 4,658 kg/ha) compared to mean production reported by USDA ERS (3,500 lb/a; 3,150 kg/ha). Water quality management was aided by use of diffuser aeration systems. These aeration systems maintained dissolved oxygen without sediment resuspension and helped maintain a greater phytoplankton population diversity than that present in ponds that employ mechanical aerators or no aeration. Researchers also demonstrated zero discharge from aquaculture facilities by complete water reuse and developed a riparian buffer strip at the Langston University Aquaculture facility.

b. **Impact** - Some Oklahoma farmers have adopted our riparian buffer strip concept and initiated their own riparian management plans.

c. **Source of Federal Funds** - Evans-Allen.

d. **Scope of Impact** - Oklahoma

Key Theme - Water Quality (Extension)

a. Both the amount and quality of our water supply are already critical issues in many areas and the problem will only get worse if we continue to pollute and utilize our water in the current patterns. Understanding relationships of aquatic organisms with their environment can stimulate interest in water quality problems and habitat degradation. Many youngsters may never be able to participate in a "hands-on" aquatic ecology program because they have not been academically or experientially exposed to water, fish or aquatic systems. An interesting aquatic education program can help participants to make better choices both as water consumers and future voters. Langston University created a school enrichment program in aquatic environmental education which captures young peoples' attention by allowing them to work directly with live aquatic animals. There are three components to this program which include: 1) the aquarium program where a 55 gallon aquarium stocked with native fish, crayfish, and mussels is taken to the classroom along with a water quality test kit, five instructional videos, and a curriculum workbook which contains ten written lesson plans; 2) the natural resource day where students are typically transported to a nearby lake and given ***"hands-on"*** demonstrations and lectures about water quality, aquatic ecology, and other natural resource issues; and 3) the recirculating tank aquaculture system where a large tank is set up and stocked with fish which the students raise and thereby learn about water quality through both curricula and direct experience with their fish.

b. **Impact** - During the 1999-2000 school year, Langston University took these programs to 44 schools where 6,591 students were exposed to principles of aquatic ecology and water quality. The teachers continually stated that the live fish hooked the student's attention which allowed them to more effectively teach about water quality and aquatic ecology. The program has stimulated a number of schools to set up their own aquariums or recirculating fish tanks so they can have a live teaching tool on display throughout the school year.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Oklahoma.

Goal 5

Enhanced economic opportunity and quality of life for Americans. Empower people and communities, through research-based information and education, to address economic and social challenges facing our youth, families, and communities.

Overview

Extension personnel at Langston University are contributing to enhance economic opportunity and quality of life for Americans. Character has become a common topic and concern from the workplace to the school classroom. Langston University Cooperative Extension personnel are addressing the challenges of character development and ethics education through etiquette seminars. A business and professional etiquette seminar was conducted with Langston University students during the 2000 Fall Semester. One hundred students participated in the seminar.

One means of enhancing the quality of life for Americans is through education and securing profitable careers. An obstacle to many students enrolling in sciences or mathematics in college is poor mathematics skills. The Booster Shots in Mathematics Program was developed to enhance the basic mathematics skills of students. Participating students have increased their skills in mathematics and their knowledge of technology.

Leadership training and development can also inspire youth to seek economic opportunities and improve their quality of life. Langston University is working with Native American and other youth in Northeast Oklahoma. Students have been enrolled in an entrepreneurship program that provides an introduction to the world of owning their own business. Students have shown increased awareness of entrepreneurship principles and money management.

Cooperative Extension also instills leadership in youth through our Summer Arts and Recreation Program. During the summer, youth participants engage in structured educational

activities that are geared toward particular art areas such a visual arts or the performing arts. The 2000 summer sessions enrolled 170 students. Parents expressed their appreciation for the program and shared how they noticed improvements in their children's attitudes about themselves and higher levels of self-esteem being exhibited.

Total Expenditures by Funding Source: $17,700.00

Full-time Equivalents: 4.00

Key Theme - Character/Ethics Education (Extension)

a. Good manners appear to have become a practice of the past. The United States is in the throes of a bad manners epidemic. There has been a severe decline in civility in the United States over the past 20-30 years. A U.S. News and World Report poll revealed that 90% of Americans believe incivility is a serious problem. The Langston University Cooperative Extension Program organized and presented a three hour "*Business and Professional Etiquette Seminar*" at Langston University during the Fall Semester (2000). Topics discussed included: How to make introductions; telephone manners; body language; dining etiquette; interviewing etiquette; and professional appearance.

b. **Impact** - Approximately 100 Langston University students attended the seminar. University professors and coaches stated how timely the seminar was for addressing the etiquette needs of their students.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Central Oklahoma.

Key Theme - Children, Youth, and Families at Risk (Extension)

a. Twenty youth from two rural Oklahoma Communities participated in the Booster Shots in Mathematics Program at Langston University. Grade levels varied from third through eleventh. The students received help with their mathematics homework and were enrolled in an individualized program tailored for boosting their basic mathematics skills. Strong mathematics skills must be developed if students plan to pursue higher education majors and eventually enter careers in the fields of Science and Mathematics.

b. **Impact** - Twelve of the twenty students (60%) made marked progress in their regular School mathematics classes. All students increased their knowledge of technology and the key role of mathematics in emerging advances in technology.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Central Oklahoma.

Key Theme - Leadership Training and Development (Extension)

a. Oklahoma ranks 27th in the nation by population with about 60% of our population living in two large metropolitan areas. This leaves nearly ½ of our population in small towns and isolated rural communities. The State is concerned about its large number of citizens living below the poverty level (14.1% for Oklahoma compared to 12.7 % for the nation). We also have a number of minorities including Native American tribes (over 35 tribes) within our boarders. The Langston University Cooperative Extension office in Northeast Oklahoma (Tahlequah) works in counties with Native American populations ranging from 8% to 42% and poverty levels from 14% to 26%. School enrichment programs have been conducted with public schools as well as home schooled audiences in Northeast Oklahoma. One school enrichment program of special interest is the youth entrepreneurship program (Mini Society). It is generating interest in the public schools through alternative education, vocational education, gifted and talented programs as well as home schooled families.

b. **Impact** - During the summer of 2000, a seven day work shop was presented to Cherokee County home schooled youth. The parents helped reinforce the idea of "no free lunches" at home and so felt involved. Parents have reported that the Mini Society was often discussed by the children after arriving home from sessions. They were surprised to hear their children talk about profit vs loss and actual cost of products among other topics. Both the children and their parents have increased there awareness of entrepreneurship and money management.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Northeast Oklahoma

Key Themes - Leadership Training and Development (Extension)

a. The Logan County Summer Arts and Recreation Project (SARP) responded to National Goal # 5 by developing informal collaborative partnerships to address social and educational issues that impact the quality of life for program recipients. Youth in Logan County have limited access to structured educational and recreational activities during out of school time. The Langston University Cooperative Extension's 4-H Youth Development area provided the leadership for empowering community and state-based organizations to implement the Summer Arts and Recreation Program. Youth participants increased their social and academic skills by engaging in structured, fun educational activities of various art forms that included visual and performing arts and physical fitness experiences. A supportive environment enabled 170 youth participants ages 7 -15 to use their discretionary time productively for two weeks during the month of July (2000).

b. **Impact** - Support systems for youth in Logan County increased and provided safe environments for participants during out of school summer months. Evaluations from participants and staff reveal that the SARP was fun and that many life skills were acquired. Participants learned how to follow instructions, the constructive use of time, critical and analytical skills, how to complete projects on time, new terminology that is included in the P.A.S.S. (Priority Academic Student Skills) mandated state curriculum, cultural inclusion, and physical fitness. Many parents expressed an appreciation for the program, and have stated that they have noticed improvements in their children's attitudes and self-esteem.

c. **Source of Federal Funds** - Smith-Lever.

d. **Scope of Impact** - Central Oklahoma

B. Stakeholder Input Process

Projects, programs and priorities of Cooperative Extension and Research at Langston University are strongly impacted by stakeholder input. Input from our stakeholders is an ongoing process. That process includes the following methods:

- Input from advisory boards
- Input during and following Research & Extension Field Days
- Stakeholder surveys

C. Program Review Process

There have not been any significant changes in the program review process since submission of the 5-Year Plan of Work (1999-2004).

D. Evaluation of the Success of Multi and Joint Activities

Multi and Joint activities include the following two:

Dairy Herd Improvement Association Laboratory

A national Dairy Herd Improvement Association (DHIA) Laboratory has been in existence for a number of years. Research has shown that when the laboratory instruments are calibrated with a cow milk standard and then goat milk is tested, there is a 29% increase in somatic cells, a .27% decrease in protein and a .04% decrease in butterfat from the actual values. The records produced by the DHI labs across the country are used to identify high producing does. These records are also useful for the exportation of these does to foreign countries. In the past, incorrect records

were costing goat producers to lose money on the resale value of their does and offspring. Langston University established a certified DHI laboratory that calibrates the instruments using a goat milk standard. We have also worked in cooperation with Texas A&M University to write a program that utilizes goat language. Goat producers are now able to get records for there animals that reflect accurate information with the correct language. These records not only reflect higher fat and protein values for a doe, but also are easier to understand when dealing with importers from foreign countries. Currently, we are serving a 27 state area that includes a majority of the eastern states.

Biological Weed Control

In cooperation with Kansas State University, Kansas Cooperative Extension, Emporia State University, and the Army Corps of Engineers, a field demonstration was conducted using goats to control sericea lespedeza, an invasive plant that is infiltrating the native range in the Flinthills of Kansas, choking out the grasslands that are a major land and economic resource. Sericea lespedeza infestation will reduce carrying capacity of native range to zero animals/acre. Shocker goats made significant progress in controlling sericea lespedeza. Shocker goats gained 10 kg during the summer grazing season. This resulted in a net profit of $5.00/hd or $20.00 per acre while controlling sericea lespedeza. In addition, goats were effective at controlling red cedar, sumac, honey locust, plum and blackberry. A field day was held to show producers (86 in attendance) the results of the demonstration. Results of the demonstration were also presented during a Lespedeza conference in Oklahoma (attended by 120 producers) and two lespedeza conferences in Kansas (combined attendance of 180 producers). The results have been presented in a number of producers results and as an abstract at a national meeting.

These projects addressed critical issues of strategic importance, including needs of under-served and under-represented groups. Planned programs described the expected outcomes and impacts. The planned programs resulted in improved program effectiveness and efficiency.

***Update to 5-Year Plan of Work (1999-2004)**

Program 5: Families First: Nutrition Education and Wellness System was included in our 5-Year Plan of Work under Goal 3. Program 5 is no longer under the auspices of the Cooperative Extension Program at Langston University.

Therefore, it is being requested that Program 5: Families First: Nutrition Education and Wellness System be released from inclusion in our 5-Year Plan of Work (1999-2004).

ANNUAL REPORT OF ACCOMPLISHMENTS AND RESULTS

COOPERATIVE EXTENSION AND RESEARCH

(Langston University)

Reporting Period: October 1, 1999 - September 30, 2000

Certification:

Marvin Burns	**Vernon L. Jones**
Research Director	**Administrator**
	Cooperative Extension Program