INTERNATIONAL ACTIVITIES OF THE E (KIKA) DE LA GARZA
AMERICAN INSTITUTE FOR GOAT RESEARCH OF LANGSTON UNIVERSITY

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Objectives

The E (Kika) de la Garza American Institute for Goat Research (AIGR) has as its mission to develop and transfer enhanced goat production technologies at local, state, national, and international levels. The Institute has many strong ties with research and academic institutions around the world and has hosted visiting scientists from over 20 foreign countries for the purpose of conducting research and demonstrations. More recently, international activities with foreign institutions have expanded to include more aspects of training and agricultural development. These activities provide unique opportunities to not only increase knowledge of foreign production systems and constraints, but also to positively impact agricultural development in foreign countries and help alleviate poverty and hunger. The objectives of AIGR’s international program are to: 1) Increase our knowledge of goat production systems worldwide and current constraints to increased production; 2) Build human capacity through training foreign scientists and agricultural workers in goat production, thereby allowing them to more effectively carry out their missions of teaching, research, and(or) extension; 3) Increase the involvement of Langston University and the Institute in agricultural development and impact on human welfare; and 4) Enhance the Institute’s knowledge of development and development issues.

Memorandums of Understanding and Research Grants

Over the past 10 years, AIGR has been involved in research, training, and development projects with universities around the world. Memorandums of Understanding have been signed with the Dairy Goat Research Laboratory at Northwestern Agricultural University of China (1992); West Visayas State University, Iloilo City, Philippines (1996); Alemaya University, Dire Dawa, Ethiopia (1999); and Debub University, Awassa, Ethiopia (1999). Collaborative activities have also been conducted with the Facultad de Medicina Veterinaria y Zootecnia de la Universidad Autonoma de Nuevo Leon, Monterry, Mexico with whom Langston University signed a Memorandum of Understanding in 1988. These memorandums of understanding have led to scientific exchanges and the conduct of research grants such as “Mimosine and Dihydroxypyridine Toxicity and Leucaena Utilization in Goats” conducted with West Visayas State University; “Strategic Use of of Leucaena leucocephala and Molasses/Urea Block for Feeding Dual-purpose Goats” conducted with Awassa College of Agriculture and Alemaya University; and “Anthelmintic Plants for Internal Parasite Control in Goats” conducted with Awassa College of Agriculture. These grants explored the use of
locally available feedstuffs for both nutritive and medicinal purposes with the goals of improving utilization of such feeds, determining efficacy of plant medicinal compounds, and increasing the scientific understanding of the nutritive and medicinal mechanisms involved.

More recent grants have included activities in agricultural development and extension along with human capacity building through training and research. This is exemplified by a grant project conducted in Armenia, a multinational grant with countries in the Middle East, and several grants conducted with Ethiopian universities.

**Armenian activities**

Since 2001, AIGR has collaborated with the USDA Marketing Assistance Project (MAP) in Armenia on a Goat Industry Development Project (GIDP). The USDA MAP is implementing the project that has ultimate goals of increasing farmer income through increased goat cheese production via enhanced milk yield. Goat cheese produced by participating cooperatives is sold in Armenia and exported to Russia, with plans to export to the US in 2003. AIGR has provided technical assistance and training to both Armenian and USDA staff and has sent short-term consultants to Armenia to assist in the project.

Collaborative efforts between AIGR and the USDA MAP began in 2001 when AIGR was awarded a USDA Innovation Grant entitled “Fostering Future Collaboration between US Institutions and the Armenian Academy of Agriculture through Training and Information Exchange.” The goals of this grant were to provide training in dairy herd improvement techniques, artificial insemination and semen collection and freezing, and to increase AIGR’s knowledge of Armenian animal production systems as well as foster future collaboration among the institutions. In August/September 2001, four Armenian scientists, one translator, and one USDA employee from Armenia spent three weeks training at AIGR. In addition to fulfilling the grant objectives stated above, AIGR scientists and staff also provided information and training on research sampling and laboratory techniques, farm management, and animal health. The Armenian scientists also visited goat farms in Oklahoma and talked to producers. Staff of the Institute traveled to Armenia in 2001 and 2002 to visit the Armenian Improved Dairy (ARID) Center to learn more about Armenian goat production and the USDA project implemented there. During their time in Armenia, AIGR staff toured many of the goat farms participating in the USDA’s GIDP project and made production and management recommendations.

As a followup to that grant, in 2002 AIGR was awarded a 15-month grant for additional collaboration with the USDA in Armenia entitled “Strengthening Collaboration between the E (Kika) de la Garza Institute for Goat Research of Langston University and the USDA MAP Project in Armenia”. The goals of this grant were to continue to provide technical expertise to the USDA goat project in Armenia and to provide further training in management, health, cheese making and product sanitation and safety, nutrition, and artificial insemination as well as semen collection and freezing. These objectives were accomplished through short-term visits to Armenia by AIGR staff and other experts. A further activity of the grant was to provide training to an advisor to the goat
project in Armenia. This person spent 10 days at AIGR in February 2002 prior to his travel to Armenia to take over duties in the GIDP project. In addition to providing training and technical expertise, AIGR acted as a source of information and assistance for the USDA in supplies procurement and problem solving.

Middle East Research Grant

In 2000, AIGR was awarded funding from USAID’s Middle East Regional Cooperation Program for a grant entitled “Multinational Approaches to Enhance Goat Production in the Middle East” involving the Desert Research Center and Animal Production Research Institute of Egypt, the Volcani Center in Israel, the Agricultural Extension Department of the Palestinian Authority, and the Jordan University of Science and Technology. The objective of this grant is to revitalize and develop the Middle East goat industry via research and technology transfer to increase income and improve the standard of living. Some of the recent specific objectives and activities include:

1) Training in goat milk technologies for project participants
2) Training in goat health management, diseases, and production
3) Characterization of chemical quality and bacteriological status of goat milk in Middle East production systems
4) Characterization of goat production systems in the Middle East with emphasis on specific technology transfer needs
5) Transfer of enhanced technology packages to goat farmers in the Middle East

A 2-week training function on milk technologies was held in June, 2002, at AIGR, with trainees from each participating location attending. The activity was carried out to aid project activities associated with milk sampling, analyses, and processing in Jordan, Egypt, and Israel locations.

In Israel, research is being conducted on goat milk quality and properties, especially as related to its suitability for production of consumable products. It has been noted that bacterial quality of goat milk on the tank level is poor. To gain a better understanding of the bacteriological status on Israeli dairy goat farms, a program has been started with treatment of individual animals in herds to determine the prevalence of bacterial infection that might influence milk quality and thereby dairy products. Results of this work indicated that there is a relatively large number of infected udder-halves (52%) in Israeli goat herds. This situation is of major importance in respect to milk quantity and quality for product production. Milk tends to bacteriologically deteriorate faster, to develop off-flavors due to enzymatic activity, and to result in poor cheese due to high number of somatic cells.

In Jordan, data on milk chemistry and microbiology have been collected, including chemical composition and numbers and types of microorganisms in goat milk in various stages of lactation. Some traditional products such as white soft cheese, labaneh (concentrated yogurt balls preserved in olive oil), and cheddar cheese were made and evaluated for yield and chemical and microbiological composition in addition to organoleptic properties. Goat breads (Shami, Baladi, and
Hybrid) were investigated for milk production, chemical composition, and microbiological characteristics at 18 locations. Currently, milk manufacturing technologies are being transferred to farmers via the extension program, through live demonstration at the milk laboratory of the Jordan University of Science and Technology, and on the premises of the farmers during field days. Also, there was a workshop held in September, 2002, concerning goat health management, diseases, and production.

Recent activities in Egypt include characterization of current goat production systems via a questionnaire and the close measuring and recording of the production performance of goats through monthly visits to selected sample flocks representing different production systems in the region. There have been a number of technology packages introduced to Bedouin farmers to minimize costs of raising goats under the local conditions. These activities include meat goat production with a high concentrate diet, making silage with crop residues, and formulation and production of supplemental feed blocks.

Ethiopian Connection

Langston University and AIGR have had a long and fruitful relationship with universities in Ethiopia that began with the aforementioned research grants conducted with Awassa College of Agriculture and Alemaya University. In 1998, a three-year grant from the Association Liaison Office for University Cooperation in Development (ALO) using funding from the United States Agency for International Development (USAID) was awarded to Langston University for an institutional partnership with Awassa College of Agriculture of the newly-formed Debub University in Awassa, Ethiopia entitled “Enhance Food Security and Income Generating Potential of Families in Southern Ethiopia Through Improved Goat Production and Extension.” In 1999, AIGR received a three-year grant for a partnership with Alemaya University, called “Enhancing Institutional Research and Extension Capabilities for Increased Food Security Through Improved Goat Production” from the United Negro College Fund Special Programs (UNCFSP) with USAID funding. Goals of these grants were to: enhance the ability of Debub and Alemaya University staff in meeting the development needs of Ethiopia; strengthen the capacity of all institutions in achieving their educational missions of research, teaching and extension; enhance food security in regions surrounding the Ethiopian universities; increase AIGR’s involvement in international activities and impact on agricultural development; and increase the internationalization of staff at all institutions. These goals were achieved through a program of collaborative research, training of Ethiopian scientists at AIGR, and the establishment of village development projects designed to enhance household food security, income generating potential, and family health status through increased goat productivity. Increased goat production was accomplished via the provision of goats and appropriate technology to women’s groups for goat production in villages near both universities.
Training Activities

In the conduct of these two grants from 1999 through 2001, six Ethiopian scientists, three each from Debub University and Alemaya University, spent between four and six months at AIGR for training in research methodologies and extension. Langston University faculty made a total of seven visits to the Ethiopian universities to present seminars, assist in collaborative research, and to monitor and evaluate the projects. In November 2000, Drs. Art Goetsch and Roger Merkel of AIGR held a special training in the surgical insertion of ruminal cannulas for staff members of both Ethiopian universities. Also in November 2000, as a part of grant activities, a conference on goat production was held at the Debub University campus entitled “The Opportunities and Challenges of Enhancing Goat Production in East Africa.” The goals of the conference were to: 1) review the current state of small ruminant production in East Africa; 2) identify the major production constraints and areas for research and extension; and 3) create a closer relationship among animal industry, research organizations, and development/extension efforts to increase animal production. The conference was well-attended and brought together individuals from government agencies, academic institutions, national and regional livestock research centers, private industry, and non-governmental development agencies to discuss current problems and constraints to goat production and to try and develop institutional linkages to work to overcome such constraints. This conference was the first of its kind to be held in Ethiopia.

Village Development

The village development projects were begun in 1999 and 2000 at Debub and Alemaya Universities, respectively. Participating villages and women were identified and goats, production training, and forage seeds/seedlings were provided. Participating women were selected based upon criteria developed by Debub and Alemaya University staff members with input from local government officials and village elders. Selection criteria included:

• Interest in participating in the goat production project. Selected women were expected to voluntarily participate in every aspect of the project.
• Family size and livestock ownership. Large families owning few, or no, livestock had a better chance of being selected to receive goats. This was done to better achieve the objective of enhancing household food security of resource poor households.
• Priority was given to women-headed households, provided the women had time to care for the goats and that goats would not be an additional burden to them.
• Willingness to devote some area for forage production
• Low to average farm size (depending on average landholding of the area)
• Be innovative and willing to try new ideas

In return for the provision of goats, each woman agreed to return 2 young goats to the project to form the basis of “goat packets” to be provided to new participants. In 1999, 40 women near Debub University received goats and the following year 100 women near Alemaya University began the project. Since that time the numbers of women participating at each university has more than
doubled to near 100 and over 200 at Debub and Alemaya Universities, respectively. Since its inception in the Alemaya region, the project has distributed roughly 300 does and 50 bucks. Over 125 kids have been born to distributed does and over 60 animals have been returned to the project as repayment of debt. In the Awassa region, over 200 goats have been distributed. One woman who received two goats has increased her herd size to 11 animals.

The impact that the development project has had on village families has been great and will continue in the future. While it is still too early to determine the ultimate impact raising goats will have on family nutritive status and income, there are some early positive indicators. Some families have begun to milk their goats to provide their families, and particularly children, with milk to consume. Some families are also beginning to fatten excess males for sale. One woman fattened a male kid and sold it for 200 Ethiopian birr (approximately 25 USD) and used the funds to begin a small scale merchandising business. She now has capital of roughly 1000 birr (118 USD). Another woman has sold two kids and purchased corrugated tin roofing for her house, replacing the old thatch roof. Another woman has sold a portion of her goats and purchased a cow capable of plowing her fields thus saving her and her family backbreaking work and improving farm efficiency. These activities, while modest to date, show the promise that goats hold in being able to improve the lives and offer better nutrition for these families. Thus, the first steps are being realized in fulfilling the goals of the development project of enhancing family nutritive status, particularly that of children, and of increasing household income through the sale of livestock.

Furthermore, distributed goats are a resource that families can use during times of extreme stress and food insecurity. This proved to be the case during the recent drought in Ethiopia, where many families were forced to either sell goats for cash to purchase food or to consume some of their animals. While this may be considered an unfortunate end to many of the project animals, the provision of goats to these families allowed them to better withstand these abject conditions and provided a degree of food security hitherto lacking in the past. The ability to assist families in dealing with natural disasters and times of potential food shortages is a very rewarding aspect of the development program.

Enhancing Technology

In 2000, Langston University was awarded a sustainability grant entitled “Enhanced Education and Computer Capabilities: The Foundation for Sustained Collaboration” from ALO and the Education for Development and Democracy Initiative for further activities with Debub University and a new institution, Oklahoma State University was added to the partnership. During the conduct of the sustainability grant, one Debub University faculty member spent one semester in Oklahoma State University’s Department of Agricultural Education, Communications & 4-H Youth Development. This was followed by a curriculum development workshop held at Debub University that was jointly conducted by an Oklahoma State University faculty member and Debub University faculty. Grant funding also provided for the training of Debub University staff in computer networking and maintenance. This grant is scheduled to terminate in June 2003.
Concomitant with the awarding of the sustainability grant, Langston University was awarded a companion Technology Enhancement grant from USAID’s Leland Initiative to establish a student computer laboratory and network on the Debub University campus. In November 2001, Drs. Roger Merkel and Terry Gipson traveled to Debub University to assist with the computer laboratory setup and installation. The laboratory consists of twelve student computers, two instructor computers, one server, and three laptop computers linked to the laboratory via a wireless network. Additional equipment and software was purchased to increase the utility of the laboratory and provide resources for presentations and computer training.

Since its installation, AIGR staff have used the computer laboratory and associated equipment to provide seminars and training in computers and multimedia. Training has been done on the basics of HTML and web page design and the use of PowerPoint for presentations. Debub University staff have used the laboratory for classroom instruction and for materials and document preparation. The laboratory also provides internet connectivity for many Debub University staff.

Future Work

While the above grants have either terminated or will end in the near future, AIGR is participating in new grants with both Debub and Alemaya University. Activities with Debub University are continuing in a collaborative grant involving Fort Valley State University, Fort Valley, Georgia entitled “Improving Ethiopian Household Food Security and Enhancing the Teaching, Research and Extension Ability of Awassa College of Agriculture, Debub University, Ethiopia” funded by UNCFSP/USAID. This grant began in 2002 and will run through 2005. Also in 2002, a grant for continued collaboration with Alemaya University involving Oklahoma State University was awarded by ALO/USAID for activities through 2004 entitled “Improving Ethiopian Household Food Security and Enhancing the Teaching, Research and Extension Ability of Awassa College of Agriculture, Debub University, Ethiopia.” While the first grants with these universities concentrated on goat nutrition, these followup grants focus more on reproduction and herd health, particularly artificial insemination and internal parasites. Training at AIGR and collaborative research at Ethiopia institutions are again cornerstones of partnership activities. Also included are workshops on internal parasites and control methods at both Ethiopian universities to be presented by a team of scientists from both the Ethiopian and US-based institutions. Further activities will occur in the area of artificial insemination and breeding. Boer goat semen will be collected and frozen in the US and shipped to both universities. Does will be inseminated and resulting progeny tested for production traits and used in the village development project. These activities represent the first importation and artificial insemination using Boer genetics in Ethiopia.
The End Result

Through its international activities, AIGR strives to enhance human and institutional capacity, positively impact development at the village level, and assist farmers in better providing for their families. Collaborating institutions benefit from enhanced resources and through personnel who have received training. Visiting scientists to AIGR contribute greatly to the research and knowledge generated through research activities. Through the conduct of international grants, AIGR staff have unique opportunities to learn about foreign goat production systems and constraints. Further, they learn about foreign cultures, peoples, and customs. Knowledge gained through these grants greatly assists AIGR staff in carrying out their missions of teaching, research and extension. Finally, these grants allow AIGR staff the potential to have a positive impact on the lives of village families in lesser-developed countries of the world.
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