Higher Education for Development Office
Knowledge, Partnerships, Results

U.S.—Mexico Training, Internships, Exchanges, and Scholarships Semi-Annual Progress Report[1]

Report Period
October 1, 2005 - March 31, 2006

Due April 30, 2006

Partnership Title: Decision Support of Ruminant Livestock Systems in the Gulf Region of Mexico

Development Area: Rural development: Economic growth and competitiveness through animal agriculture

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Period Covered by this Report: October 1, 2005 – March 31, 2006 (six months).

[1] Revised April 1, 2006

PARTNERSHIP PROFILE (Executive Summary)

This partnership employs a systems-oriented program of training and decision support to the ruminant livestock industry aimed at improving productivity, profitability and rural incomes in the Gulf region. A fundamental goal is to enhance the capacity of decision makers to assess and act upon technology, market and policy changes. Our efforts have focused on developing an internet-based platform of teaching, research and communication for training a mixed cadre of UADY, UV and Cornell students. Key successes during the reporting period include a "living laboratory" field course (IARD 602) in Mexico during January, enhanced understanding of methods for collaborative research and instruction, and development of a substantial archive of print and electronic learning materials. In addition, five full semester courses on the teaching platform, each with its own Web site, but also integrated with our TIES partnership site (http://tiesmexico.cals.cornell.edu), were delivered to a multidisciplinary audience of international students in 2005-06. This platform serves as an information clearinghouse to support collaborations among the partners and to inform other interested parties. These courses have employed videoconferencing to convene joint sessions with Cornell and UADY students and faculty. Selected joint classes and videoconferences were video-recorded, integrated with presentation (Powerpoint) files, and archived for use at the **Cornell Transnational Learning** Web site (http://transnationallearning.cornell.edu/. Our "living laboratory" field course—a joint teaching experiment involving students, faculty and scientists from UADY, UV, INIFAP, Colegio de Posgraduados/Campus Cárdenas and Cornell—was a resounding success. Students gained experience in fact-finding and in building personal relationships and cross-cultural teams while analyzing constraints affecting farmers and rural populations in the Gulf region. Camaraderie, enthusiasm, excitement, and communication among Mexican, US, Australian, Indian, Italian and Japanese participants were fostered through a structured itinerary for the gathering of information. This learning experience—unique for Mexican participants—involved interactions with many farmers and professionals in Mexico's agricultural and natural resources sector (http://ip.cals.cornell.edu/courses/iard602/2006spring/mexico/). A major short-term training program at Cornell University was concluded for a team of six Mexican scientists and graduate students from UADY, Universidad Veracruzana and INIFAP. Research collaborations included thesis projects (or proposals under development) of TIES-supported Mexican students and others who are addressing pertinent management and policy issues affecting dual-purpose and beef cattle systems, sheep systems, and agricultural sustainability in the Gulf region. Concurrently, there has been joint planning of the external evaluation of our TIES project (to be conducted in May and July) and of teaching and research platform activities for the 2006-07 academic year. The previously-identified needs for increased flexibility to better achieve UADY's transition to a new curriculum have been re-emphasized. Two Mexican students (Victor Absalón and Luis Nabté) are now successfully completing the second semester of their MS programs under this partnership. A significant portion of their coursework requirements has been met by the courses of our teaching platform. A third Mexican student, Omar Cristobal (from Universidad Veracruzana), was admitted to Cornell's Graduate School to begin the MS degree program in Animal Science in August 2006. A total of three TIES-supported Mexican MS degree students (two from Veracruz, one from Yucatán) will be enrolled at Cornell in the 2006-07 academic year. Overall, the project has made substantial progress toward enhancing capacity of partner institutions to address relevant development issues for ruminant livestock systems, training a skilled cadre of systems-oriented researchers and extensionists, and broad dissemination of information to the livestock sector.

QUALITATIVE INFORMATION

1.	State the overall objective of this higher education partnership and intended development results. This partnership employs a systems-oriented program of training and decision support to the ruminant livestock industry aimed at improving productivity, profitability and rural incomes in the Gulf region. A fundamental goal is to enhance the management capacity of decision makers to assess and act upon technology, market and policy changes.
2.	What activities have the partner institutions undertaken during this reporting period (October 1, 2005 – March 31, 2006) to achieve the partnership objectives and outcomes agreed upon in the HED subagreement? Project activities were focused on joint teaching and research platforms and short-term training in support of the ruminant livestock industry in the Gulf region. Main activities and accomplishments included (approximate chronology): • *Master of Science degree programs at Cornell.* Two Mexican students, Victor Absalón and Luis Nabté, are now successfully completing the second semester of their MS programs under this partnership. A significant portion of their coursework requirements thus far has been met by the core courses of our joint teaching platform (see below) plus an additional fifth course on the platform. Other training and scholarly activities for these students included development of conceptual frameworks and preliminary proposals for thesis studies and other TIES-related research, and by supporting the TIES teaching platform as course assistants. A third Mexican student, Omar Cristobal (from Universidad Veracruza, UV), was admitted in March to Cornell's Graduate School. Omar will begin the MS degree program in Animal Science in August 2006. A total of three TIES-supported Mexican MS degree students (two from Veracruz, one from Yucatán) will be enrolled at Cornell for the 2006-07 academic year. • *Web-platform of teaching, research, and communication.* A Web-platform, integrated with our TIES Web site (http://tiesmexico.cals.cornell.edu), was created specifically to support the teaching platform. However, it also facilitates research collaborations and information flows among the partners and other interested parties. Open-access Web sites for the core courses are: o AnSc 640, TIES Research Seminar. (http://tiesmexico.cals.cornell.edu/teaching/ansc640.cfm) o AnSc 400, Livestock in Tropical Farming Systems. (http://www.ansci.cornell.edu/courses/as400/) o IARD 402, Agriculture in Developing Nations I—Mexico edition. (http://ip.cals.cornell.edu/courses/iard402/2005fall/mexsection.cfm) o IARD 602, Agriculture in Developing Nations II—Mexico edition. (http://ip.cals.cornell.edu/courses/iard602/2006spring/mexico/)

AEM 494. In addition to the core elements above, a fifth course was added to the teaching platform, AEM 494, *Introduction to System Dynamics Modeling*. Password-protected materials for this course are available to registered parties (e.g., short-term trainees) via http://www.blackboard.cornell.edu.

Cornell Transnational Learning. Our TIES Web-platform is further supported by video-recorded presentations (with integrated Powerpoint presentations) from these five courses. These learning products constitute an important additional educational resource for faculty, graduate students and researchers at UADY, UV and INIFAP. These materials are available at the **Cornell Transnational Learning** Web site (http://transnationallearning.cornell.edu/).

- *Teaching platform, 2005-06*. Efforts were focused on delivering four core courses (three involving videoconferencing), one field trip laboratory, and the additional systems modeling course. In addition to the Cornell student body, these courses served students and faculty from UADY, UV and Cornell. The IARD 602 field laboratory was also facilitated by INIFAP and other TIES partners and the Colegio de Posgraduados, Campus Cárdenas, Tabasco (ColPos).

    - *AnSc 640*. Besides Cornell students, participation in this fall 2005 seminar included eight Mexican participants at Cornell (six short-term trainees and two MS students) and parallel participation by an unknown number of students and faculty at UADY. Participation in the spring 2006 seminar included two Mexican MS students at Cornell. UADY students and faculty were unable to participate due to unresolved problems in implementation.

      Two presentations were video-recorded, integrated with respective Powerpoint files, and made available at the **Cornell Transnational Learning** Web site. Powerpoint files of all presentations in this course are available at http://tiesmexico.cals.cornell.edu/teaching/ansc640/2005fall/ and http://tiesmexico.cals.cornell.edu/teaching/ansc640/2006spring/.

    - *AnSc 400*. This spring 2006 course included two Mexican MS students. UADY students and faculty were unable to participate due to implementation issues. The course's field laboratory was cancelled for 2006 and 2007. There were two reasons for this modification. First, the HED prohibition of no-cost extensions beyond September 30, 2007 required resource reallocations for all Mexican MS students who will be finishing their degree programs after this project end date. Second, UADY was challenged to resolve internal issues affecting participation by their students and faculty in the field laboratory and campus-based components of this course (e.g., how academic credit would be granted for participation).

    - *IARD 402*. This fall 2005 course, a prerequisite (preparatory course) for IARD 602, included eight Mexican participants at Cornell (6 short-term trainees plus 2 MS students) and nine students (6 men, 3 women) at UADY. Each Cornell presentation was video-recorded, integrated with its Powerpoint file, and made accessible in a special IARD 402 library at **Cornell Transnational Learning** (http://transnationallearning.cornell.edu/secureaccess/courses/iard402602/index.htm).

Seven presentations specifically addressed Mexican issues, five of which were videoconferences (*) by TIES project collaborators for UADY, UV and Cornell audiences. These were:

- *August 26**. Prof. Juan Jiménez (UADY). Agriculture and development in the Mexican tropics with emphasis on the Yucatán Peninsula.
- *September 8.* Prof. Robert Blake (Cornell). Livestock in development.
- *September 23**. Prof. Lilia Fernández (UADY). Maya households: Domestic archaeology and ethnoarchaeology.
- *September 30**. Prof. Lorenzo Aceves (Colegio de Posgraduados, Cárdenas). Biophysical environment and effects on plants and animals of Tabasco State.
- *November 4**. Dr. Heriberto Román (INIFAP). Agriculture and food systems in Veracruz, Mexico: Land uses and crop, livestock, agroindustry and marketing systems.
- *November 18.* Prof. R. Blake (Cornell). The Cornell-UADY-UV-INIFAP TIES project, Decision Support of Ruminant Livestock Systems in the Gulf Region of Mexico.
- *December 2**. Profs. R. Blake, T. Tucker, C. Nicholson (Cornell), G. Ríos and J. Magaña (UADY). IARD 602 learning objectives, course expectations, field trip itinerary and activities, and rural appraisal teams.

- *IARD 602.* There were 34 participants from six countries in the highly successful laboratory component of this spring 2006 course. Among the participants were 14 Mexican students: two from Cornell, nine (8 men, 1 woman) from UADY, and three UV men. In addition to excellent support from TIES collaborators from UADY, UV and INIFAP, this course greatly benefited from the expert contributions by Dr. Lilia Fernández at Uxmal, Dr. Mario Osorio in Tabasco, and many farmers and their families and other hosts throughout the field trip. Students from UADY, UV and Cornell discovered together, built friendships and camaraderie, and learned how to work together across cultures. See the IARD 602 Web site (http://ip.cals.cornell.edu/courses/iard602/2006spring/mexico/) for detailed information about the participants, course objectives and design, and the field trip itinerary.

  The campus-based component of this course comprised class meetings in parallel at UADY and Cornell plus eight joint sessions via videoconferencing. As in other core courses, these joint classes were video-recorded, integrated with presentation (Powerpoint) files, and archived for use at **Cornell Transnational Learning**.

Invited presentations were:

- *January 31.* Phil McMichael (Cornell, Development Sociology). Impacts of trade liberalization, especially NAFTA, on US and Mexican farmers.

- *February 2.* Bill Rivera (Univ. of Maryland, Education). Extension reforms for world agriculture.

- *February 7.* Alice Pell (Cornell, Cornell International Institute for Food, Agriculture and Development). Interdisciplinary research on sustainability issues in East Africa.

- *February 9.* Elvira Sánchez (Cornell, Romance Studies). Mexican masks: Modern cultural hybridity.

The following student theme group presentations of individual written projects were organized around two overarching, interdisciplinary sets of issues that were addressed in IARD 602. Designated theme groups, each comprising UADY and Cornell students, were **Livelihood Systems in Mexico's Gulf Region:** (Group 1) **Which are the priority information needs, policies, and programs?** (Group 2) **How to make research and extension relevant?**

- *February 28.* Theme group #1, Cornell team
- *March 2.* Theme group #1, UADY team
- *March 7.* Theme group #2, Cornell team
- *March 9.* Theme group #2, UADY team

- *Course addition to the teaching platform.* Our TIES teaching/training platform and learning were enhanced by adding AEM 494, *Introduction to System Dynamics Modeling.* This valuable course was taught for all eight Mexican participants, including MS students and UADY, UV and INIFAP students and colleagues. This course built on concepts introduced in previous training events, and provided an integrating systems-oriented framework for other research and instructional activities. The 22 course participants were from diverse backgrounds (e.g., systems ecology, public administration, economics, systems engineering, animal science) and many countries (e.g., Kenya, Turkey, China, Italy, Canada, US, Mexico).

  Course materials are accessible to registrants via the Cornell Blackboard Web site for AEM 494. Thirteen video-taped lectures integrated with Powerpoint presentations from this course were made available for downloading in response to requests from the six Mexican visitors. These videos are available at the AEM 494 website. The remaining lecture videos will be made available to all collaborating institutions on DVD. All of the integrated lecture videos for the course are already available in streaming video mode via **Cornell Transnational Learning**.

- *Short-term training concluded.* Short-term training at Cornell University was concluded in October and November for the team of six Mexican scientists and graduate students

from UADY, UV and INIFAP. Training elements were identified in our 2004-05 annual report (http://tiesmexico.cals.cornell.edu/reports/documents/narrative_051031.pdf). Trip reports by the UADY team and by UV's Dr. Canudas may be found at our TIES Web site at (http://tiesmexico.cals.cornell.edu/teaching/documents/trip_report_uadyteam.pdf and http://tiesmexico.cals.cornell.edu/teaching/documents/trip_report_canudas.pdf).

- *Research platform.* The following thesis projects are currently underway by Cornell graduate students and are part of our TIES research agenda:

    - *Nutrition management decision making: An intensification strategy for beef cattle systems in Tizimín, Yucatán, México.* Kotaro Baba (Japanese MS student). UADY collaborators: Guillermo Ríos and Juan Magaña and doctoral student Valentín Cárdenas.

    - *Enhancing the sustainability of smallholder crop-livestock systems in the Yucatán Peninsula.* David Parsons (Australian doctoral student). Approximately one year of field work for this independently funded project began in January. Key collaborators include various UADY faculty and graduate students.

  The following thesis projects by Mexican MS students at Cornell also contribute to our TIES agenda:

    - Victor Absalón. **Topic**: *Forage-based opportunities to improve productivity and profit of dual-purpose cattle systems in the State of Veracruz, México.* UV and INIFAP collaborators: Francisco Juárez, Bertha Rueda, Eduardo Canudas. This thesis project contributes to the INIFAP-funded project led by Dr. Rueda, "Nuevas opciones de producción sostenible para el sistema de bovinos de doble propósito en el trópico mexicano."

    - Luis Nabté. **Topic:** *Nutrition management options for improved growth performance of hair sheep in Yucatán smallholder systems*. This project is in collaboration with the dissertation study of D. Parsons, itself an outgrowth from our TIES field survey of Yucatán sheep producers, and research by UADY´s Juan Magaña.

  Each of these thesis research projects carries inherent linkages with farmers, farmer cooperatives, GGAVATTs (Grupo Ganadero de Validación y Transferencia de Tecnología), state government organizations like Fundación Produce, and with our teaching platform, especially through the IARD 602 itinerary of field visits for 2007.

  Other research collaborations are underway. We are working to integrate analyses from our rapid appraisal of sheep-owning smallholders with results from the sheep system simulation model for an article to be submitted to the journal *Agricultural Systems*. Also a detailed Spanish-language summary of the results of the rapid appraisal project is in preparation in collaboration with faculty and graduate students at UADY.

- *Mid-term partnership planning meeting.* A mid-term internal evaluation and partnership planning meeting was held January 18 in Veracruz. (See minutes of this meeting at http://tiesmexico.cals.cornell.edu/reports/documents/narrative_060118.pdf). Primary

	objectives were to evaluate achievements, consider value-adding program modifications for the second half of the project, discuss collaborative research opportunities especially involving Mexican MS students, and discuss the objectives and plan for external evaluation of our TIES project. Unfortunately, the consensus program adjustments agreed upon to enhance overall benefits from the TIES project will need to be revised because they conflict with HED prohibition of no-cost extensions announced subsequent to this meeting. • *Key project reconfigurations.* We did not receive sufficient applications for the MS degree training of a fourth Mexican student at Cornell as originally planned. In addition, thus far there have not been any UADY undergraduate students identified for participation in the complementary undergraduate student exchange activity. Consequently, in lieu of the fourth Mexican MS student scholarship and the UADY undergraduate student exchange activity, the partnership will soon propose to HED (along with other modifications) a substitute activity for an MS student scholarship. This alternative involves short-term training at Cornell in the fall semester 2006 of a team of four UADY graduate students (already identified and approved by UADY). This activity will provide the approximate scholarship equivalent of a fourth Mexican MS student. • *External evaluation planning.* All partners and collaborating individuals have been involved in the preliminary planning of project evaluation to be carried out by Dr. Lucia Vaccaro. This evaluation will be conducted in two phases: one at Cornell and one in Mexico. Dr. Vaccaro will carry out the Cornell phase during the week of May 15-19. The July 1-11 Mexico phase will involve visits and consultations at both partner locations: UADY (Merida) and UV and INIFAP (Veracruz).
3.	How have these activities strengthened the capacity of the Mexican higher education institution(s)? All teaching, training and research activities, and concomitant institutional and personal interactions, helped to better define and understand problems affecting farmers in the region. Each of the five courses on our teaching platform and the planning of thesis and other research projects were aimed at resolving management challenges of livestock owners. They also provided substantial interactions and "food for thought" foment and reflection about curriculum design and modifications to better prepare the next generation of professionals to effectively address Mexican problems and challenges. The IARD 602 field laboratory—putting together in farmer's fields an international team of students and faculty, farmers and other Mexican professionals—was catalytic in this regard. The overall goal is for livestock owners, their communities, and other professionals to benefit from a functional partnership focusing on decision support of the systems they manage. These activities have challenged UADY to consider needed adjustments—some structural in nature, others operational—to implement appropriate curricular changes and to capitalize on the learning and potential institutional synergies from this and future international partnerships.
4.	How have these activities benefited the community in Mexico?* Our IARD 602 field course and research activities have visibly demonstrated to farmers, farmer organizations and rural communities that the university is reaching out to them and is concerned

	about responding to their problems and enhancing management capacity to assess and act upon technology, market and policy changes. **The community in Mexico beyond the campus of the Mexican higher education institution(s).*
5.	How have these activities benefited the U.S. institution? These activities build capacity and enhance Cornell's ability to train future professionals from around the world to deal with pertinent global, as well as Mexican, problems. As a result, Cornell faculty members further developed skills in the application of methods and technologies to facilitate cross-cultural, inter-disciplinary research and instruction. Personal interactions and communications also have been strengthened between interested faculty members and research scientists in addressing real-world problems and constraints. These are mutual benefits. Through program achievements, starting with the 2004-05 TIES short courses, short-term training, and full implementation of our teaching and research platforms, Cornell is also better prepared to focus on relevant issues with scientists and students at partner institutions.
6.	How have these activities benefited the community in the U.S.?* Public awareness and consciousness about pertinent Mexican, regional and global issues—global citizenship—have been enhanced. Specific educational outreach mechanisms are through US student participation in (and parental and home community knowledge about) core courses, our Web-platform information clearinghouse, and press articles about modern educational programs. For example, the attached April 6, 2006 article, "Cornell students visit 'living labs' of Mexico and India", was published in a *Cornell Chronicle* edition that was circulated to all US land grant institutions (see attached Cornell Chronicle article April 6, 2006.jpg or page 10 at http://www.news.cornell.edu/Chronicle/06/04_06_06.pdf. **The community in the U.S. beyond the campus of the U.S. higher education institution(s)*
7.	List other *collaborating Mexican institutions* (e.g., NGOs, community-based organizations, government agencies, small businesses, other higher education institutions, etc.) and briefly describe their involvement in partnership activities during this reporting period. Many others have contributed to our partnership's teaching and research platforms. • Teaching platform collaborations included the following. o *Colegio de Posgraduados, Campus Cárdenas, Tabasco (ColPos)*. Professors Lorenzo Aceves and Mario Osorio were key collaborators in the planning and coordination of the Tabasco segment of the IARD 602 field laboratory. Prof. Osorio gave a presentation about ColPos graduate student training and research programs. As shown in #2 above, Prof. Aceves also contributed a key videoconference presentation in IARD 402 about Tabasco's agro-climatology. o Several other institutions, individuals and business owners contributed as "guest professors" in the IARD 602 laboratory addressing real-world problems. Many individuals were involved (**see itinerary** at the IARD 602 Web site), including:

	▪ *Papaya Caribe*. A papaya export business also involved in forestry, horticulture and livestock production. ▪ *Comisión Nacional de Áreas Protegidas*. A government agency charged with managing the Ría Lagartos Biosphere Reserve. ▪ *Ejido Yaxchekú*. A Yucatán ejido managing a diversified agricultural portfolio including honey bees. ▪ *Chocolates Casep*. A vertically-integrated cacao farm and chocolate manufacturer in Tabasco. ▪ *Ejido Villa Cuahtemoc*. Theses ejidatarios in Tabasco informed about the lack of technical assistance and social networking to help support their livelihoods from cattle, copra and other crops. ▪ *Rafael Aguirre*. Entrepreneurial agrí-businessman and cattle producer in Veracruz. ▪ *Silvio Lagos*. Veracruz congressman (former federal congressman) who discussed development needs of the Mexican rural sector. ▪ *GGAVATT Nueva Generación*. Leaders of this livestock NGO, accompanied by INIFAP consultants, informed about dairy production and marketing challenges in the Veracruz highlands. ▪ *GGAVATT Génesis*. At their annual planning meeting this NGO membership of *ejidatarios* informed about their business model and the need for dedicated participation by each member. ▪ *INIFAP El Palmar Research Station, Tezonapa*. INIFAP researchers informed about agroforestry, reforestation and integrated cropping options (e.g., tropical fruits, spices, rubber) for local farmers. • Student research projects are underwritten through individual farmer collaborators and farmer organizations who are partners in these studies. For example, the farms of six smallholder collaborators are research sites for the study by D. Parsons. Many farmers and the Unión Ganadera Regional del Oriente de Yucatán (UGROY) are collaborators with UADY scientists in the study led by K. Baba.
8.	List other *collaborating U.S. institutions* (e.g., NGOs, community-based organizations, government agencies, small businesses, other higher education institutions, etc.) and briefly describe their involvement in partnership activities during this reporting period. • *University at Albany, State University of New York, School of Business.* The Mexican MS students had the opportunity to interact with systems researchers from the School of Business to complement the AEM 494 course materials.

- *Dowling College, School of Business, Oakdale, NY.* The Mexican MS students had the opportunity to attend a seminar on "participatory systems model building" presented by a faculty member visiting Cornell. This activity complements material covered in AEM 494 and may be an important component of future joint diagnostic and research efforts.

- *Ventana Systems, Inc (a systems modeling consulting company).* The Mexican MS students had the opportunity to meet with a Senior Consultant from Ventana Systems, Inc. during his visit to Cornell. They discussed the application of systems modeling in consulting and business, and attended presentations on integrated modeling of the global climate system and the future of electricity generation in China. (These presentations were videotaped and are available to all of the collaborators at the AEM 494 website.)

- *Dr. Richard Dudley* (*a systems modeling consultant*). The Mexican MS students had the opportunity to meet with Dr. Dudley, a fisheries biologist who applies systems modeling in his work. His work on fisheries depletion is relevant for issues discussed during the IARD 602 course with a local fisherman's cooperative. In addition, Dr. Dudley presented a seminar on the use of systems modeling to evaluate programs that make payments to farmers for environmental services. This has relevance for programs in the watersheds in Veracruz State visited during IARD 602.

- *Northland Sheep Dairy, Freetown Corners, NY.* The eight Mexican participants during Fall 2005 visited this local organic sheep dairy to discuss its forage management practices, nutrient cycling and its efforts to evaluate the sustainability of its management practices. This activity reinforced learning related to systems thinking and modeling and provided a useful contrast to the sheep production and marketing systems in Mexico.

- *Scheffler Dairy Farm, Groton, NY.* Mexican TIES participants from UADY, UV and INIFAP visited this 50 cow dairy farm that made the transition to organic production in late 2003. Owner-operators Ed and Eileen Scheffler explained organic dairy management systems and markets, the decision-making processes that preceded the transition, and the ongoing learning process that was required. This visit provided an example of how some farmers are responding to rapid structural and market changes in the US dairy industry. Participants learned about the roles that informal innovation and farmer-to-farmer networks are playing as small producers respond to the challenges of change.

- *Hardie Farms, Lansing, NY.* Mexican TIES participants visited this free stall dairy farm housing more than 800 cows and met with owner-operators Skip Hardie and Steve Palladino. This visit offered a contrasting example of managerial response to rapid agricultural industry change. Undergoing major expansion in the past two decades, Hardie Farms employs state of the art technology and economies of scale for labor, capital and management inputs to thrive when average producers are encountering shrinking net profit margins. Participants discussed design elements of milking parlors, free stall housing, feed storage and facilities for manure handling that are typical of large, confinement dairy operations. Mr. Hardie discussed the role of various knowledge and information sources—including university researchers, extension educators, private consultants and other farmers—to facilitate the efforts of his management team.

	• *Cornell Sheep Farm (Animal Science Training and Research Center), Harford, NY.* Mexican TIES participants discussed common sheep management systems in New York State with Farm Manager Brian Magee. Visitors toured facilities and discussed Cornell's research and extension programs (http://www.ansci.cornell.edu/sheep/index.html). • *Cornell Beef Farm (Animal Science Training and Research Center), Harford, NY.* Mexican TIES participants discussed common beef systems in New York State with Farm Manager Debbie Ketchun. Visitors were given an overview of how the university works with producers in a program of applied research and extension (http://www.ansci.cornell.edu/beef/beef.html).
9.	Is your partnership working with Mexico's *Consejo Nacional de Ciencia y Tecnología* (CONACyT)? No. As indicated in our annual progress report for the period ending September 30, 2005, we have sought CONACyT scholarship support for new TIES applications but without reply. PIFOP-CONACyT funds were utilized by UADY to support their graduate students in August-October 2005 short-term training at Cornell.
10.	Please briefly describe the partnership's greatest *successes* during this reporting period? Has your partnership also experienced any unanticipated successes? • *IARD 602 two-week "living laboratory".* This joint teaching experiment was a resounding success in fact-finding and in building personal relationships and cross-cultural teams while analyzing constraints affecting farmers and rural populations in the Gulf region. Camaraderie, enthusiasm and excitement, and fluid communication among Mexican, US, Australian, Indian, Italian and Japanese participants were fostered through a structured itinerary for the gathering of information. This learning experience—unique for Mexican participants and others—involved many farmers and professionals in Mexico's agricultural and natural resources sector. This information gathering mission was especially successful due to concerted efforts by UADY, UV, INIFAP and ColPos colleagues and many gracious hosts. This laboratory experience was complemented by written term projects and videoconference presentations by students about issues that were observed to impinge on farmers and communities in this region. • *Enhanced understanding of methods and technologies for collaborative research and instruction.* As a result of our partnership activities, better appreciated are videoconferencing, Web-platform and face-to-face interactions as valuable constituents of a problem-oriented coursework curriculum and for designing thesis research projects. Alternative approaches and methods of instruction and learning have been demonstrated through short-term training and the five courses constituting our TIES teaching platform. Details are found at our TIES project site (http://tiesmexico.cals.cornell.edu/) and on our Web platform of course sites. These activities and interactions facilitated discussions with all partners about coursework focus and content and about problem-solving priorities and feasible research design (e.g., principal drivers and feedbacks affecting performance of livestock and farming systems).

	• *Learning materials archive.* Besides educational materials (literature references, Powerpoint presentations) from the five short courses in 2004-05, materials are also accessible (and downloadable) for all courses in this 2005-06 partnership program through our TIES Web site (http://tiesmexico.cals.cornell.edu) and Web-platform. Furthermore, a total of 41 video-with-Powerpoint presentations from the 2005-06 academic year are currently available (soon to be a total of 54 presentations) via **Cornell Transnational Learning**.
11.	Please briefly describe any programmatic *challenges* during this reporting period? The partnership has faced serious challenges in determination of decision-making authority and UADY administrative and logistical support, which made successful achievement burdensome. Despite agreements to remedy chronically slow action with more efficient and timely execution of project tasks, change has been slow. Project activities need to be carried out in a more efficient and timely manner in order to fully realize, and not jeopardize, the expected benefits for all partners, especially UADY students and faculty. Other key challenges include reducing barriers and increasing institutional encouragement and faculty support to obtain greater UADY faculty and student participation in joint courses and videoconferences. An action of central importance is to determine a credit-granting mechanism for UADY students enrolled in courses on the TIES teaching platform. Another goal has been to identify mechanisms for greater participation by partners in Veracruz. Accordingly, all IARD 602 field trip participants were grateful for the field trip facilitation and coordination by UV and INIFAP collaborators and by participation of three UV students (One of these, Omar Cristobal, begins an MS degree program at Cornell in August.) We are taking advantage of other opportunities to achieve this goal; both our teaching and research platforms will benefit from research collaborations under the INIFAP project led by Dr. Bertha Rueda, "Nuevas opciones de producción sostenible para el sistema de bovinos de doble propósito en el trópico mexicano."
12.	Has your partnership conducted collaborative *research* during this reporting period to address a development issue in Mexico? Yes. A dynamic simulation model of Yucatán sheep production and marketing was developed using information from our rapid appraisal of these farming systems. Results from this simulation model were presented in a research seminar hosted by the Department of Agricultural and Applied Economics at the University of Wyoming in March 2006. A simplified conceptual simulation model was utilized for a capstone course exercise in AEM 494, *Introduction to System Dynamics Modeling.* Students were required to evaluate Yucatán sheep system behaviors and potential impacts from alternative policy and technological interventions. This case example and systems analysis methodology also served as a research planning (and thinking) tool in other courses on the teaching platform, including the TIES Research Seminar. Plans are to integrate analyses from our rapid appraisal of sheep-owning smallholders with results from the sheep system simulation model for an article to be submitted to the journal *Agricultural Systems*. A detailed Spanish-language summary of the results of the rapid appraisal project is in preparation in collaboration with faculty and graduate students at UADY. This summary will be provided to relevant researchers, policy makers, and producer organizations in the region.

	As described in #2, four graduate student research projects, two by Mexican students Victor Absalón and Luis Nabté, are aimed at livestock development and agricultural sustainability issues in the Gulf region. Details about these projects are given on page seven of this report.
13.	Has your partnership adapted *curricula* or introduced methods of instruction relevant to Mexico's development needs during this reporting period? Alternative approaches and methods of instruction and learning have been demonstrated through short-term training and the five courses constituting our TIES teaching platform. Details are found at our TIES project site (http://tiesmexico.cals.cornell.edu/) and on our Web platform of course sites. These activities and interactions facilitated discussions with all partners about coursework focus and content and about problem-solving priorities and feasible research design (e.g., principal drivers and feedbacks affecting performance of livestock and farming systems). The UADY remains challenged, and in transition, in finding ways to implement a more flexible and diverse curriculum of instruction, including complementary pedagogical methods. Elements of the current Cornell curriculum (to which UADY and UV faculty were exposed during short-term training and 2005-06 joint courses) constitute part of a menu of options for consideration. As emphasized in previous reports, and in past (and continuing) collegial discussions with all partners, this project is an opportunity to experiment and to test alternatives for each institution's future curriculum and portfolio of crucial extracurricular training options.
14.	Has your partnership undertaken activities to prepare individuals for participation in Mexico's *workforce* during this reporting period? Yes, in the sense that our project is aimed at helping develop a better-skilled cadre of systems-oriented professionals who are aware of real-world problems and how they might be addressed (e.g., via IARD 602 field laboratory, farm-level rapid appraisals, farmer participation in research projects). Fundamentally, all student and faculty participants, and the teaching and problem-solving efforts in which they participate, are integrated into the dynamics of the Mexican workforce. Students (and faculty members) come from a wide range of socioeconomic strata. **Disadvantaged Mexicans are defined as Mexican nationals primarily residing in rural, poor areas in Mexico and/or of indigenous descent.*
15.	Has your partnership been involved in *community outreach* (e.g., agricultural extension, service learning, etc.) activities in Mexico during this reporting period? Yes, the previously-described IARD 602 field laboratory is also fundamentally a community and rural outreach activity facilitated by those working in this forum. Farmers from all back-grounds—ejidatarios to commercial agribusiness owners—and other professionals in the rural sector were gratified by the attentions given and the importance ascribed by this international field course to their communities and livelihoods.

16.	Has your partnership been involved in building Mexico's *trade capacity* during this reporting period? Not directly. However, the systems-modeling components and sheep system simulation model have identified the importance of livestock trade and trade policies for rural development in the region.
17.	Has your partnership donated any books, computers, software, library supplies, etc. to the Mexican higher education institution(s) during this reporting period? • The following publication was distributed to all TIES partners and most IARD 602 hosts: *Millenium Conference on Agricultural Development in the 21st Century.* International Programs, College of Agriculture and Life Sciences, Cornell Univ., Ithaca, NY. 90 pp. • Fifteen sets of three educational CD-ROMs were donated to UADY´s library and for student use. These materials support one of the courses on the joint teaching platform, AnSc 400, *Livestock in Tropical Farming Systems*. o *Livestock in Tropical Farming Systems: A course and resource materials*. CD-ROM, Dept. Anim. Sci. Cornell Univ., Ithaca, NY. This disc contains original text, examples of field research questionnaires, selected full-text research reports, other literature citations, animated figures and photographs, video graphic citations, and audio-video clips of interviews and scripted field observations. Users are helped to explore hierarchies of binding constraints on productivity and economic returns in complex tropical systems with livestock. o *Livestock in Tropical Farming Systems: Multimedia Library*. CD-ROM, Dept. Anim. Sci. Cornell Univ., Ithaca, NY. This disc contains a stand-alone library of 10 multimedia modules integrating original text with hyperlinks to full-text supporting literature, animated figures, photographs, and audio-video clips. These modules cover the following topics: 1) The Livestock Linchpin of Agrosilvopastoral Systems 2) Animal Agriculture Challenges in Tropical Latin America 3) Typical Pattern of Cattle Growth under Grazing in Tropical Environments with Rainy and Dry Seasons 4) Seasonal Variation in Dietary Composition in Smallholder Crop-ruminant Systems 5) Seasonal Variation Influences the Intake and Partitioning of Dietary Nutrients of Ruminants

	6) Our Own Technology—Cattle Production in Tropical America 7) Dual-purpose Cattle Nutrition Subsystem in a Part-whole Framework of Interacting Objectives: Dual-purpose cattle production systems comprise forage (land), animal, input and output subsystems 8) Daughter Milk Response from US Sires in Latin America and US Holstein Herd Environments: Average economic returns on genetic investments (in semen) to improve milk production of Holstein cows in Latin America 9) Genetic Effects for Growth, Milk and Reproduction in Zebu-European Crossbred Cows in Ethiopia 10) Productivity Payoffs from Livestock Technologies in Alternative Farming Systems o *Livestock in Tropical Farming Systems: Video Clip Library*. CD-ROM, Dept. Anim. Sci. Cornell Univ., Ithaca, NY. This video-graphic library constitutes a virtual field trip to farm, market, industry and rural landscapes in Ethiopia. The library contains 24 thematically organized vignettes along a highlands-to-lowlands transect to illustrate the nature and complexity of tropical systems with livestock. Its purpose is to facilitate discussion and analysis of the hierarchies of binding constraints on productivity and economic returns in agricultural systems.
18.	Has your partnership donated any books, computers, software, library supplies, etc. to any other Mexican institution (e.g., NGOs, cooperatives, women's groups, clinics, etc.) during this reporting period? No, except as noted in #17.
19.	How has information about your partnership been disseminated during this reporting period? • *Web-platform.* Information has been disseminated through our TIES Web site (http://tiesmexico.cals.cornell.edu/) and through the five course sites identified in #2. New platform additions in the reporting period were the IARD 602 Web site (http://ip.cals.cornell.edu/courses/iard602/2006spring/mexico/) and the one for AEM 494 at (http://www.blackboard.cornell.edu). • *TIES photo albums.* **Cornell-UADY partnership: Prof. Robert Blake´s photos** is a **flickr** Web location (http://www.flickr.com/photos/81651699@N00/sets/) containing more than 60 albums with over 2500 photos about our partnership activities. These photos are also accessible via the slide shows section of our TIES project site and the field trip itinerary at the IARD 602 site. Needed photographs are provided to HED and USAID-Mexico through this mechanism. • *October 27. A* general information article about our partnership based on interviews of short-term training participants from UADY, UV and INIFAP was published in the *Cornell Chronicle.* Entitled "Cross-border team to help Mexican farmers better manage

	their livestock", this article may be accessed at *ChronicleOnline* (http://www.news.cornell.edu/stories/Oct05/Mexican_Scholars.kr.html) and in the *Cornell Chronicle* archive at www.news.cornell.edu. • *April 6.* "Cornell students visit 'living labs' of Mexico and India" was published in a *Cornell Chronicle* edition circulated to all US land grant institutions (see page 10 at http://www.news.cornell.edu/Chronicle/06/04_06_06.pdf or the attached Cornell Chronicle article April 6, 2006.jpg.
20.	Outline your partnership's *planned activities* for the next six months, paying particular attention to achieving the stated objectives of the ALO/HED subagreement. • Train at Cornell University three Mexican MS students (Victor Absalón, Luis Nabté, Omar Cristobal) who are participants in and contributors to our TIES research and teaching platforms. • Plan five courses constituting the 2006-07 teaching platform, including the IARD field laboratory scheduled for January 3-18. These courses, described earlier in this report, include substantial videoconferencing and preparation of electronic media adaptable for use by students and faculty in UADY and UV teaching programs. • Revise Web sites for courses on the teaching platform. • Complete thesis project of K. Baba focusing on management of Yucatecan beef cattle systems. • Continue dissertation research project of D. Parsons on sustainability of Yucatecan crop-livestock systems. • Complete and distribute the detailed Spanish-language summary of rapid appraisal survey information. • Complete and submit a journal article to *Agricultural Systems* on the dynamics of sheep production systems in the Gulf Region and analysis of policy options. • Further develop the research project of V. Absalón during summer 2006 collaborations with UV and INIFAP colleagues. • Conduct the external evaluation of our TIES project (May and July).
21.	Please list all *events* (*ceremonies, conferences, meetings, workshops, etc.)* in the U.S. and Mexico that will take place in the next six months and include **dates and locations**. HED and USAID will use this information to schedule site visits. • May 15-19. External evaluation at Cornell University, Ithaca, NY. (phase one) • July 1-4. External evaluation at UADY, Mérida, Yucatán. (phase two) • July 5-9. External evaluation at UV and INIFAP, Veracruz, Ver. (phase two) • July 10-11. External evaluation at UADY (continuation)

ENVIRONMENTAL MITIGATION ASSESSMENT

Background from USAID/Mexico
Many techniques that are applied to solve environmental problems also can have negative impacts depending on how they are implemented on the ground. To avoid the negative potential impacts from these activities, we ask that partners describe the mitigation considerations that are included in the training for or implementation of activities to effect positive change in the environment or for other developmental challenges. If activities are being directly implemented, we further ask partners to describe how they are monitoring their mitigations to ensure that those measures are effective. Although some projects are not directly related to the environment, partners need to consider the potentially negative environmental impacts in execution of partnership activities.

Please answer the following questions if the partnership conducted or trained others to conduct activities that have the potential to result in negative impacts on the environment.

1.	If you conducted capacity building activities that have the potential to negatively impact the environment, what environmental mitigation and impact assessment trainings for Mexican participants have been included in the activities? This emphasis is especially incorporated into four courses on our teaching platform, IARD 402, IARD 602, AEM 494 and AnSc 400. Although we are not yet focusing directly on assessing potential negative environment effects of agriculture or their mitigation, these joint courses especially acknowledge the need for specific actions to ameliorate unfavorable impacts and to regenerate stocks of agro-ecosystem resources. For example, attention is devoted to strategies for managing and utilizing native plant species, especially multi-use species and habitat that provide ecosystem services as well as livestock feed and fuel for rural households. The doctoral dissertation research project of D. Parsons is focused on the dynamics of nutrient stocks, flows and feedbacks in Yucatan farming systems with sheep with the goal of understanding how these systems can be made both more productive and sustainable. Our systems-oriented approach has broadened the research agenda and will result in greater ability to assess how interventions can minimize the "unintended consequences" (negative side effects) including various forms of environmental degradation.
2.	If you implemented activities last year, what specific activities had a potential environmental impact, either positively or negatively? We did not have any implementations carrying direct environmental impact (except via farmers' practice of animal agriculture itself). However, expected impacts would be negative if livestock management ignored ecosystem considerations like those mentioned above, which is among project considerations. They would be positive, or at least less unfavorable, if management strategies effectively consider ecosystem dynamics, amelioration of unwanted environmental impacts, and regeneration of natural resources (e.g., biodiversity in flora and fauna).
3.	What research and evaluation was conducted to mitigate any potential negative environmental impact of these activities? Activity of this kind has not been conducted by our partnership. Although direct implementations are an acknowledged need, our plans include options to ameliorate undesirable impacts.

4.	What specific techniques or processes were established to mitigate and monitor the environmental impact of these activities? Please include who has been involved in the process and when this has taken place. Our project planning and coursework platform incorporate valuable essential ecosystem principles and considerations. Although environmental mitigation and monitoring are not focal project undertakings, students have undertaken these issues as part of their scholarly pursuits (e.g., IARD 602). We plan to continue fostering this process with relevant environmental issues to be included in our coursework platform.
5.	Are mitigation techniques working? If yes, how is this being verified? If not, how will the mitigation plan be modified? As indicated above, we have not undertaken any direct implementations. However, one project objective is to limit or minimize unfavorable environmental effects, especially negative impacts of farming system management options on biodiversity of flora and fauna.

QUANTITATIVE INFORMATION

		This period (October 1, 2005 -March 31, 2006)			**Total since beginning of ALO/HED funding** (including 10/05-3/06)		
1.	How many **scholarships of two or more semesters** were supported?* **Please note that scholarships include graduate level training for Mexican participants in the U.S. or in Mexico with U.S. faculty. Scholarships can also include sabbatical and specialized training in the U.S. for Mexican faculty.* ***If a Mexican participant receives funding for 4 academic semesters, please count as 2 scholarships. Scholarships can be funded by partner institutions(s), the private or public sectors, and or USAID.*		Male	Female		Male	Female
		Graduate: 2 Faculty: 0	2	…	Graduate: 2 Faculty: 0	2	…
	Provide estimated total cost: ~$65,000 for 2005-06 academic year.						
2.	How many **disadvantaged Mexicans** have benefited from TIES?* ***None.*** **Disadvantaged Mexicans are defined as Mexican nationals primarily residing in rural, poor areas in Mexico and/or of indigenous descent.*		Male	Female		Male	Female
		Graduate: Faculty:			Graduate: Faculty:		
3.	Approximately how many Mexicans have received **short-term training** (academic training of less than one year, workshops, seminars, professional training) and follow-on training or participated in research, projects, distance education, observation trips, outreach, coordination, and technical meetings?		Male	Female		Male	Female
		Graduate: 28 Undergraduate: 7 Faculty: 4 Others:	28 4 4	… 3 …	Graduate: 141 Undergraduate: 8 Faculty: 4 Others:	115 4 4 34	26 4 … …
	Describe the purpose, location, and dates of each training: 1) August-November 2005. Faculty and grad student training at Cornell for UADY, UV and INIFAP participants. 2) Fall 2005 and spring 2006. IARD 402 course at Cornell and IARD in Mexico and Cornell.						
4.	How many **internships** for Mexicans were supported? ***None***.		Male	Female		Male	Female
		Graduate: Undergraduate:			Graduate: Undergraduate:		
	Describe the purpose and dates of the internship(s):						

		This period (October 1, 2005 -March 31, 2006)			**Total since beginning of ALO/HED funding** (including 10/05-3/06)		
5.	How many **exchanges** for **Mexicans** does this partnership support? ***None***.	Faculty: Graduate: Undergraduate: Staff/ Administrative: Business: Other:	Male	Female	Faculty: Graduate: Undergraduate: Staff/ Administrative: Business: Other:	Male	Female
	Describe the purpose and dates of the exchange(s):						
6.	How many **exchanges** for **US participants** does this partnership support? ***None***.	Faculty: Graduate: Undergraduate: Staff/ Administrative: Business: Other:	Male	Female	Faculty: Graduate: Undergraduate: Staff/ Administrative: Business: Other:	Male	Female
	Describe the purpose and dates of the exchange(s):						
7.	How many Mexicans are participating in **TIES-related degree programs**? List institution and type of degree and field of study	# Graduate students with TIES scholarship funding	Male 2	Female …	# Graduate students with TIES scholarship funding	Male 2	Female …
		# Graduate students without TIES scholarship funding	Male 2	Female …	# Graduate students without TIES scholarship funding	Male 2	Female …

		This period (October 1, 2005 -March 31, 2006)			**Total since beginning of ALO/HED funding** (including 10/05-3/06)		
8.	How many Mexicans have **graduated**?* ***None***. ***"Graduated" is defined as having been granted an academic degree (master's degree etc.) or diploma (diplomado, certificate etc.) using scholarship funds. If a program offers a diplomado at a reduced cost or free of charge, this program would be considered scholarship-funded***.	# Graduated <u>with</u> TIES scholarship funding*	<u>Male</u>	<u>Female</u>	# Graduated <u>with</u> TIES scholarship funding*	<u>Male</u>	<u>Female</u>
		# Graduated <u>without</u> TIES scholarship funding*	<u>Male</u>	<u>Female</u>	# Graduated <u>without</u> TIES scholarship funding*	<u>Male</u>	<u>Female</u>
9.	Of all of the Mexican participants that have received training in questions 1-8 of this section, <u>approximately</u> how many are **youth (24 or younger) and not youth (25 or older)**?		<u>Male</u>	<u>Female</u>		<u>Male</u>	<u>Female</u>
		24 yrs or younger	25	3	24 yrs or younger	100	26
		25 yrs or older	8	…	25 yrs or older	20	…
10.	How many **new degree programs** has your partnership established? ***None.*** Please indicate the number, name and type of degree program(s)	Number of new degree programs: Name of degree: Type of degrees: (e.g., traditional, joint, dual)			Number of new degree programs: Name of degree: Type of degrees: (eg., traditional, joint, dual)		
11.	Has your partnership leveraged **additional resources, beyond the cost-share budget in the subagreement**, to expand collaborative efforts? ***Yes.***	List source and estimated total dollar amount: 1. Doctoral student support (D. Parsons), $10,000. 2.			List source and estimated total dollar amount: 1. $48,850 (various, see 2005-06 annual report) 2.		
12.	How many times has your partnership **consulted/collaborated with a Mexican government entity/organization**?	Number: continuously through our INIFAP partner			Number: continuously through our INIFAP partner		
	List and describe the nature of these consultations/collaborations:						
13.	How many times has your partnership **engaged in *policy* initiatives in Mexico** during this reporting period (e.g., taken part in government-sponsored panels, written public policy position papers, consulted with Ministry of Education officials)?	Number: 0			Number: 0		
	Describe the nature of these engagements:						