



RUMINATIONS

NEWSLETTER OF THE GLOBAL LIVESTOCK COLLABORATIVE RESEARCH SUPPORT PROGRAM

GL-CRSP PEACE Project Develops Livestock Early Warning and Market Information System for Afghanistan

The Afghanistan PEACE project, short for Pastoral Engagement, Adaptation, and Capacity Enhancement, has completed the initial phases for the implementation of a Livestock Early Warning and Market Information System similar to the LEWS/LINKS and GOBI Forage technologies in place in East Africa and Mongolia. In collaboration with the Afghan Ministry of Agriculture, Irrigation, and Livestock (MAIL) and Kabul University, implementing partners University of California, Davis and Texas A&M University began the second field season this March, conducting in-depth plant specimen surveys, rangeland inventories, and training for the refinement and calibration of the early warning system.

Livestock production has been an important component of the Afghan agriculture economy both as a critical source of household protein and a major component of national income. In the



From left to right, Catherine Schloeder, Mohammad Daud Asad and Mohammad Dawood Sherzad. Photo by Michael Jacobs.

1970s, animals and animal products accounted for roughly 50% of agriculture's contribution to gross national product and 40% of exports. Despite this traditional importance, some aspects of livestock production have not been given as much development

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Livestock Forage Prediction in Mongolia Transformed Thanks to GLCRSP

A cable from the US Embassy in Mongolia on the successes of the GL-CRSP GOBI Forage Project was recently approved for release to US government agencies and the public.

The cable describes the GOBI Forage Project as a "cutting-edge project that has established a forage monitoring and forecasting service that regularly delivers map information to pastoral communities, policy makers and administrators responsible for agriculture and rural development."

"...the way [the technology] was applied in Mongolia was truly seminal, and the impact on the ground was dramatic."

*Jeff Goodson, Senior Program Manager
USAID Mission to Mongolia*

The GOBI Forage Project, which has been operating since 2004, was further lauded by the Embassy for its successes, deriving in part from the Project's "ability

to successfully carry out four complementary activities: adapting the technology for measuring forage quantity to local conditions; conducting detailed field measurements of forage quality; information

outreach; and linking information with herder alliances." According to the cable, project "impact

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The Board for International Agricultural Development Recommends Extension for GL-CRSP, RFA Delayed

At the Board for International Agricultural Development (BIFAD) meeting at the National Press Club in Washington D.C. on February 27th, the Board motioned to “extend the Global Livestock CRSP, and if additional funding is needed, make it a funded extension.” The current GL-CRSP grant ends September 30, 2008. The motion was a component of a three-part motion including the obtainment of a waiver to “forward fund the current CRSPs,” and to “take the time necessary to have a true collaborative process for the planning of both a livestock-climate change CRSP and a horticulture CRSP; that a planning grant for a water CRSP be issued; and that the current CRSPs be considered for an increase in the upper funding levels, at least closer to where they were in the past.”

The motion was in response to a presentation by Dr. Ray Miller, chairman of a taskforce formed by BIFAD to analyze management issues surrounding the CRSP programs. Dr. Miller presented a series of management issues confronting CRSP programs, followed by a series of recommendations. Among the issues was the lack of USAID Administrator-approved guidelines for CRSPs, and the release of Requests for

Application (RFA) without sufficient time for Management Entity (ME) overlap. According to the taskforce, the last set of approved guidelines for the CRSP program was established in the late 1980s. Numerous revisions have been made to the guidelines but none of these versions have been fully processed and approved by the Administrator. In addition to seeking approval, Dr. Miller recommended that they remain guidelines, and not be considered mandatory, as this would limit flexibility of CRSP programming. In regards to the RFA and Management Entity overlap, Dr. Miller recommended that “if there is not adequate time for a proper RFA process for continuing CRSPs, that an extension be implemented.”

Following Dr. Miller’s presentation, the Board agreed on a motion to bring attention to the taskforce’s recommendations. The three-part motion was voted on and unanimously approved.

The GL-CRSP is anticipating a one-year program extension, and is currently awaiting news from USAID on the potential for a funded extension. A concept note for a new Livestock Climate Change CRSP was released prior to the BIFAD meeting. However, it is unclear given the recommendations of BIFAD when the RFA will be released. 🍷🍷

Minutes of the BIFAD meeting can be accessed at the NASULGC website, www.nasulgc.org. Information on the livestock concept note can be found at the GLCRSP website, glcrsp.ucdavis.edu.

The primary role of BIFAD is to advise the USAID Administrator on agricultural development priorities and issues, and to monitor activities undertaken under Title XII, including the CRSPs. BIFAD members are appointed by the President of the United States.

Current members are:

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NASULGC

Global Livestock CRSP and World Bank Organize Planning Initiative

By David Wolking, University of California, Davis

In response to the World Bank *World Development Report 2008: Agriculture for Development*, the Global Livestock Collaborative Research Support Program (GLCRSP) in collaboration with the World Bank's Agriculture and Rural Development Department spearheaded a planning initiative entitled: "Repositioning Livestock on the Development Agenda." The initiative, funded by a Multi-Donor Trust Fund and through partnerships with other organizations and initiatives was organized to: convene a global partnership; undertake analysis of important sub-sector issues; identify points and means of intervention; identify research/knowledge gaps; and mobilize resources to implement the findings at national and international levels. The initiative brought together livestock and development professionals from organizations including the World Bank, the GL-CRSP, the academic and university community, USAID, the UK's DfID, the Gates Foundation,

and members of the CGIAR.

Through a series of interactive discussions on several key issues in the livestock sector, including optimization of the role of livestock in development, containment of disease threats, and sustainability and preservation of natural resources



Visit the GLCRSP website for downloadable Podcasts of the discussions at the GLCRSP/World Bank planning initiative. The Podcasts include discussion on key issues in the livestock sub-sector including Market Access, Climate Change, Biofuels, Nutrition and more.

in the context of climate change, the participants identified a two-part strategy for advancing the sub-sector agenda: 1) the development of a donor funded advocacy strategy for the use of livestock as a development tool; and 2) the commissioning

of a Summary Paper featuring key issues in the livestock sub-sector, which would then be synthesized into a working publication for dissemination to the public.

The combined effort of this Summary Paper and advocacy committee are intended to generate good media and attention on the use of livestock

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as a development instrument, and market the message that livestock have significant contributions to make towards poverty alleviation and pro-poor growth. Planning for the commissioning of the papers and formulation of the advocacy group is expected to begin this spring. 🐏

For further information on the initiative and a copy of the full report, please visit the Featured Publications section on the GL-CRSP homepage: <http://glcrsp.ucdavis.edu>.

Participant Perceptions of the Avian Flu School in Ghana

By Aaron Christian and Gympfawab Nikoi, ENAM project staff, University of Ghana, Legon

In May 2007, Ghana became the eighth African country to confirm H5N1 avian influenza outbreaks in poultry. In July 2007, the Animal Science Department of the University of Ghana, in collaboration with the ENAM project, hosted a 4-day Avian Flu School (AFS) program sponsored by the Global Livestock Collaborative Research Support Program.

Instructors for the school were David Bunn, Program Manager of the AFS at the University of California, Davis, and Peter Msoffe from Sokoine University of Agriculture in Tanzania. The University of Ghana facilitator was Prof. Aning (Animal Science Department).

The program was attended by 21 representatives of the University of Ghana (Animal Science and Agricultural Extension Departments and the School of Public Health), the Ministry of Health, the Ministry of Food and Agriculture (Veterinary and Extension services) and Heifer Project, Ghana. The location for the workshop was Mensvic Hotel, East Legon from 10th to 13th July, 2007.

In January 2008, four of the participants in the program,

were interviewed to assess their perceptions about the AFS program in which they participated. The four interviewees included a Laboratory Diagnostician, a Veterinary Field Officer, a Senior Veterinary Officer of the Ghana Veterinary Services, and a District Agriculture Extension Officer (seconded as



Avian Flu School Project Manager, David Bunn (left), and Co-PI, Dr. Peter Msoffe, University of Sokoine, Tanzania were instructors of the highly successful 4-day AFS course in Ghana. Photo by Danielle Knueppel.

a field officer for the ENAM project field site in Northern Ghana). A semi-structured interview guide was used to guide the dialogue with the selected participants. The interviews solicited information on the participants' general impressions about the AFS program; previous information on Avian Flu; perceptions of the usefulness of the AFS to their

work; and recommendations for improving the AFS program.

General Impressions. All those interviewed were of the view that the AFS was timely, given that cases of Avian Flu had been reported in the country only a few months prior to the start of the program. Additionally the participants agreed that the topics covered by the AFS were very practical and that the presentations were simple and easy to understand. According to the veterinary field officer, *"Materials used for the training were simple and user-friendly and covered certain basic topics like how to slaughter a chicken."*

The diversity of backgrounds of the individuals present at the AFS was highlighted by the interviewees: They noted that the representation of national as well as local level

stakeholders allowed for a rich exchange of experiences which made the program very interactive. They also pointed out that assignments given at the end of some of the modules helped them to assimilate the information provided and ask questions to clarify issues. There was consensus that the AFS did well to emphasize rural /

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Villager feeding his chickens in Kitelewasi, Tanzania. Recommendations from participants in Ghana included adding a module on proper management of poultry feeds and more discussion of bio-security issues. The Avian Flu School has been designed to be adaptable to different countries and environmental conditions. The course that was given in Ghana was piloted in Tanzania and has been conducted in five African countries. Trainees from 17 different countries have participated in the GLCRSP Avian Flu School. Photo by Danielle Knuettel.



village poultry since about 80% of Ghana's poultry industry can be described as village poultry enterprises. Those interviewed also expressed being impressed with the range of topics covered and felt that they had received up-to-date and insightful information in these topics. Information on ways of preventing the Avian Flu outbreak through ensuring an effective bio-secured environment were particularly appreciated.

In the words of the veterinary field officer interviewed. *"Since attending the Avian Flu School, I am on top of my work when it comes to the control of avian flu, especially ensuring effective bio-security practice on the field at various levels."*

Prior Knowledge. It was the opinion of the veterinary officer interviewed that the depth of information received during the AFS was far superior to any other provided in trainings that he and other participants had previously

received. He reported that the leader of the Avian Flu diagnosis team in Ghana who was present at the AFS, had received extensive training on advance surveillance and laboratory diagnoses of avian flu in programs he attended in Kenya and South Africa. He pointed out that information that he (the veterinary officer) and other participants had received from previous training sessions were essentially things that had been downloaded from the internet.

According to the senior veterinary officer and the agriculture extensionist interviewed, what training they had received prior to the AFS had not been very practical and not applicable to rural poultry.

Usefulness of the AFS. All the four participants interviewed agreed that the AFS was very useful to their work because it provided them with up-to-date and well researched

information on effective surveillance mechanisms for AF, and prevention and management of AF outbreaks. The practical sessions were also considered very useful as they learned how to do certain things. The senior veterinary officer indicated that the materials received at the AFS are now serving as training tools to train local poultry farmers on bio-security for AF.

Recommendations. One recommendation made for improving the AFS was to devote more time to discussing bio-security issues and include a field visit to a location where bio-security issues could be practically explored. Another recommendation was to include proper management of poultry feeds in the AFS modules, as poultry farmers in Ghana have many challenges in this area that affect poultry health. 🐔🐔

For more information on the Avian Flu School, please contact David Bunn, dabunn@ucdavis.edu.

Tackling Zoonotic and Emerging Infectious Diseases

by David Wolking, International Agricultural Development, University of California, Davis

Anthropogenic forces are changing global environments and bringing together species who previously had little or no contact. These new interactions can form the basis for the generation of new zoonotic diseases, such as HIV/AIDS and Avian Flu. The Global Livestock CRSP recognizes the threat posed by zoonotic diseases, and has developed an integrated approach to zoonotic disease diagnostics, prevention, and response.

As human populations continue to expand in developing countries, land will increasingly be converted from forest, wetlands, and savannah to agricultural fields, pastures, and settlements. Deforestation reduces biodiversity, and while land use conversion can, in theory, increase some measures of biodiversity, the integrity of the biodiversity component is compromised. Destruction of habitat through land use conversion forces species that may previously have had little interaction to compete for resources. Land use changes are habitat changes for species that are forced to either adapt, or face extinction.

Land use conversion and diminished biodiversity occur at varying scales. Ecologists have developed a concept called the “dilution effect,” which states that the more individuals there are in a group, the smaller is the probability of predation on an individual. The forces that reduce biodiversity also often reduce the size and number of groups, increasing the probability of extinction of local groups or species. Destruction of habitat forces species to utilize marginal habitats,

increasing the probability of interaction between previously isolated groups, and increasing the probability of novel interactions that can be a source of new diseases.

Infectious disease is a natural phenomenon and basic ecological process. Disease inducing pathogens attack and internally consume an organism, just as predators attack and consume their prey. Similarly, just as a lion confronted with loss of habitat and diminished numbers of traditional prey can turn to new sources of prey and subsistence, in some

cases human pathogens also adapt to new reservoir hosts, often across different species. A zoonosis is an infectious disease that can be transmitted from animals to humans, and from humans to animals. The ability of a zoonosis to switch reservoir hosts demonstrates the extraordinary adaptability of disease inducing pathogens, an adaptability that is increasingly tested, challenged and nurtured by land use change, population growth, and threats to habitat and biodiversity.

Like infectious diseases, zoonoses are also a natural

When water is limited, pastoralists like this Maasai child have to use the same water sources as their cattle for drinking and bathing.

Shared water sources increase the risk associated with disease transmission between wildlife, livestock, and humans. Photo by Dr. Joe Brownlie.



Zoonotic diseases like bovine tuberculosis (BTB) can be transmitted between livestock and wildlife in other parts of Africa. Recently HALI documented BTB infection in both domestic cattle and free-ranging buffalo at the wildlife-livestock interface near Ruaha National Park. The HALI team is working to characterize the spatial distribution of BTB in and around Ruaha in order to estimate potential impacts for both conservation and livelihoods. Photo by Tag Demment.



phenomenon. Bubonic plague, rabies, yellow fever, Lyme disease, and many strains of influenza are all zoonoses that have inflicted humans and animals with lethal consequences. While the occurrence of zoonoses is certainly not a modern trend, the appearance in recent years of many new zoonoses, such as Ebola, SARS, Mad Cow, West Nile fever, bovine tuberculosis, Avian Flu, and HIV/AIDS to name a few, certainly deserves attention. Zoonotic pathogens account for 75% of emerging infectious diseases in humans.

What is it about modern society that seems to incubate and populate these diseases? Does globalization and the increasing interconnectivity of societies, ecosystems, and landscapes mobilize and stimulate the pathogens that otherwise would remain undisturbed and out of touch with human impact?

Disturbance is another natural phenomenon that will only increase in intensity with the

demands of an expanding human population. Agricultural development, focused on intensification, will not curb extensive land use conversion practices. The complexities and interactions underlying the root causes of deforestation (socio-economic stress, policy initiatives, population growth, and cultural and traditional livelihoods), will continue to push agriculture to be both more extensive and intensive thereby bringing humans and other species into closer, new and often more intense contact. The challenge then, is to create systems which minimize the probability of the creation of new zoonoses and the control of those that emerge, through an improved understanding of the processes of disease creation and transmission, the methods for prevention, and the possibilities for eradication.

The Global Livestock CRSP has committed its energy and resources to these challenges, and recognizes the importance

of zoonoses as an effect of the intensifying interface between humans, domestic livestock, and wildlife. The appearance of zoonoses is especially relevant for agricultural development, where the rural poor, who are often pushed onto marginal lands, are in essence at the gateway for zoonotic transmission. Ebola, for example, surfaced in 1996 in northeastern Gabon, when rural villagers consumed a scavenged chimpanzee carcass. Food insecurity and lack of access to animal source foods from domestic livestock turns communities to bush meat for animal protein, with potential harmful or lethal results. Urban and peri-urban areas are increasingly at risk as well. Urbanization in developing countries, due to rapidly expanding population growth, changing land tenure and land use schemes, and socio-economic stress, has forced human and animal populations into more compact

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The dry Great Ruaha riverbed in October (left) and the flowing river in December (right). The drying of this normally perennial river may enhance disease transmission among people, livestock and wildlife as all are forced to share diminishing dry season water sources. Dry Ruaha photo (left) by Peter Coppolillo. Flowing Ruaha photo (right) by Deana Clifford.

environments. The majority of livestock intensification in developing countries occurs in peri-urban sectors, where poverty, food insecurity, poor sanitation, and industry coexist in the absence of proper planning and infrastructural development. Here too, zoonoses have thrived. The H5N1 virus, commonly known as Avian Flu, has flourished in the urban and peri-urban areas of Southeast Asia, and has spread rapidly throughout the continent into the Middle East, Europe, and Africa. It is the concentration of animals and people under poor sanitary conditions that increases the number of interactions, speeds the evolution of disease organisms, and augments the probability that a lethal form of zoonoses will emerge.

Recognizing the threat of zoonoses and understanding their origins allows for the development of prevention and risk mitigation strategies

to protect both the original reservoir hosts and wildlife, as well as the domestic livestock and human organisms to which they are vectored. Dr. Jonna Mazet of the University of California Davis School of Veterinary Medicine's Wildlife Health Center is the Principal Investigator for the GL-CRSP Health for Animals and Livelihood Improvement in the Rungwa-Ruaha Ecosystem, Tanzania (HALI) Project. Dr. Mazet's research is investigating the disease interface of humans and animals at their most essential point of contact, water.

Water is arguably our most important resource, as humans and animals depend on clean water for health and survival. However, sources of clean water are dwindling due to demands from agriculture, pollution, and global climate change. As water becomes more and more scarce, animals and people are squeezed into smaller workable areas.

Contact among infected animals

and people then increases, facilitating disease transmission. When this situation is complicated by co-infection with HIV/AIDS, the results can be catastrophic to families and entire communities.

The Rungwa-Ruaha ecosystem in Tanzania is a biologically diverse and economically important region, which is seriously threatened by the seasonal drying of the Great Ruaha River. The primary agents reducing river flow are uncontrolled agricultural water diversions that do not feed back into the river, and intensive livestock grazing of wetlands. The HALI Project is exploring the impacts of zoonotic disease caused by restricted water flow, degraded water quality, and increased interactions between livestock and wildlife. According to Dr. Mazet, it is likely that the requisite sharing of diminishing water sources in rural Tanzania is increasing disease transmission

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and illness in livestock, wildlife, and people, reducing livestock productivity and even impacting non-agricultural means of livelihood improvement, such as wildlife tourism. By determining zoonotic disease presence and prevalence in water, domestic animals, and wildlife, in both areas of ample available water and areas of water restriction, the project aims to collect the critical data necessary to develop socioeconomic and health models of zoonotic disease impacts. Detailed analyses of these models will allow targeted management recommendations to improve water management, and design effective public health policy and agricultural development strategy.

Though HALI is only in its initial phases, bovine tuberculosis has already been identified in both cattle, from which people consume raw products, and in wildlife that reside in the wildlife management area located between the human populated areas and Ruaha National Park. Understanding disease threats to wildlife is of critical importance to Tanzania, as wildlife-based tourism is a major contributor to the national economy. The HALI team's finding of an infected buffalo is particularly significant. Buffalo can serve as a reservoir, transmitting BTB to other sensitive wildlife species. Also, because buffalo are closely related to cattle, the presence of BTB in buffalo represents a significant increase in risk for disease transmission back

to livestock, and therefore to humans. Furthermore, human communities in Ruaha contain significant numbers of immuno-compromised individuals at high risk for disease transmission due to HIV/AIDS. This situation facilitates the rapid introduction of forms of TB into human populations at rates higher than would be expected, forming the potential for the creation of new strains. In essence, the area could become disease generating hot spot.

Disease is intimately connected to livelihoods and lifestyle. While immersed in the investigation of disease transmission and illness from a veterinary medicine perspective, the HALI Project conceptualizes the broader context, focusing research on socio-economic surveying, household behavior and sanitation, and how water availability impacts work stress and disease. Pastoralists and agro-pastoralists within the Rungwa-Ruaha ecosystem are increasingly at risk of not only disease, but of socio-economic isolation and marginalization. Poverty helps generate disease risk, compounding the threat to health at both the biological and the social scale. With the future of pastoralism in development circles being transformed from livestock production to wildlife management in many areas of Tanzania, efforts to enhance pastoral livelihoods and health must recognize the diversified

livelihood portfolio of pastoralists, including production, bush meat trading, and crop cultivation. In the HALI Project, livelihoods are extended beyond humans to include livestock and wildlife, ensuring a holistic and ecological approach to addressing the various components of disease transmission and health.

Now in its third year, HALI is continuing dynamic research into the documentation and prevention of disease, investigations into socio-economic and livelihood parameters affecting Ruaha's agro-pastoralists, and developing close collaborations with local institutions, the Tanzanian National Parks and Sokoine University of Agriculture.

Another GL-CRSP project, the Avian Flu School (AFS), has developed a train-the-trainer avian flu prevention and response curriculum to train experts at the national, district and local levels. Like HALI, AFS is also based at the UC Davis School of Veterinary Medicine's Wildlife Health Center, and over the last two years, has conducted more than 20 workshops in the US and five African countries. To date, avian flu outbreaks have occurred in 10 African countries, while the WHO has documented cases of bird Flu transmission to humans. AFS's Principal Investigator, Carol Cardona, designed and developed the AFS as an adaptable approach to tap into local expertise and to

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address local needs and issues. Currently, AFS is conducting training programs at the district-level in Kenya and Uganda, and at the district and village level in Tanzania. Partnered with veterinary faculties in the African countries, AFS is proving effective in building local capacity to prevent zoonoses such as bird flu, and to control other major diseases afflicting poultry. The AFS project has received excellent reviews from trainees, who then use their new skills to train others. Complementing its prevention and response activities, the AFS project has also teamed up with two other GL-CRSP projects, ENAM and HALI, in livelihood enhancement support activities.

In addition to addressing Avian Flu, AFS is working with districts and villages to control Newcastle disease, another disease plaguing poultry production in Africa. Newcastle is a viral disease, which kills as much as 80% or more of unvaccinated poultry flocks in villages across Africa and in developing countries around the world. The prevalence of Newcastle disease makes early detection of H5N1 avian flu difficult, as the two diseases have very similar symptoms. While

working on improvements in poultry production and health as part of the project's livelihood enhancement activities, AFS began establishing vaccination programs at the village level to



The prevalence of Newcastle disease makes early detection of H5N1 avian flu difficult. The AFS has implemented a highly successful vaccination program in Tanzania. Photo by Danielle Kneueppel.

develop sustainable models for community poultry production. Reports from program field staff indicate that the vaccination programs have led to a large increase in poultry production in project villages. Furthermore, the implementation and administration of the vaccination program in one region has already been adopted by district officials, who are extending the program across the southern highlands of Tanzania. This rapid adoption of the program at the district level demonstrates the adaptability and sustainability of AFS methodology. Importantly, villages participating in the vaccination program can serve as sentinel villages for early

detection of H5N1 avian flu, as the diagnosis of H5N1 avian flu is much easier in Newcastle vaccinated flocks.

The GL-CRSP research-based approach to tackling the web of issues surrounding zoonotic and emerging infectious diseases allows for a more complete understanding of the integrated and related parts, leading to the development of informed intervention and prevention planning. This approach addresses both the ecological and sociological components

surrounding the origin and spread of disease, and has the potential to adapt to the often-changing circumstances underlying disease ecology. Furthermore, by focusing its efforts on disease hotspots in developing countries, the GL-CRSP is assisting in critical capacity building processes at the local, national, and regional levels, supporting the necessary framework for the development of coordinated disease prevention and response strategies. 🐔🐔

For more information on the HALI project, contact Deana Clifford at dlclifford@ucdavis.edu. For more information on the AFS project, please contact David Bunn at dabunn@ucdavis.edu. Or visit the GLCRSP web site, glcrsp.ucdavis.edu.

ENAM Team Offers the First “Nutrition, Sustainable Livelihoods and Extension” Course at University of Ghana

By E.K. Colecraft, G.S. Marquis, O. Sakyi-Dawson, A. Lartey, B. Ahunu, and L.M. Butler

Thirty-four students are currently attending a new course at the University of Ghana, entitled, “Nutrition, Sustainable Livelihoods and Extension,” developed by the GL-CRSP Enhancing Child Nutrition through Animal Source Food Management (ENAM) project. The course is introducing students to qualitative assessment techniques and frameworks, which thus far have not been offered in the nutrition undergraduate program.

Additionally, the course is providing students with the opportunity to integrate nutrition information with other disciplines in addressing community issues, therefore providing more holistic solutions. Students are introduced to the Sustainable Livelihoods framework and the UNICEF malnutrition framework and are learning the interrelations between disciplines in Agriculture and Food and Nutrition. They are also receiving skills training in extension principles, such as behavior change communication in nutrition education, to enhance their abilities to effectively address nutrition issues. Course instructors include faculty from the departments of Agricultural Extension, Food Science, and Nutrition, and lecturers from the Nutrition Division of the Ghana Health Services.

During the planning phase of the ENAM project, a community-driven problem model was developed that described the causal links to the constraints of the use of Animal Source Food (ASF) in children’s diets in Ghana. A key constraint that emerged from the process was the lack of knowledge of community workers (agriculture extension and nutrition) about how to adequately develop education opportunities for caregivers on nutrition issues within the context of the caregivers’ day-to-day realities.

The process demonstrated the value of extension-based exploratory processes that are participatory and steeped in the sustainable livelihoods strategy for diagnosing community nutrition problems, and that identify relevant solutions for implementing appropriate actions or interventions. It also highlighted the need for nutrition practitioners to be equipped with basic concepts of participatory research to adequately work with communities to assess their needs and develop context-specific and holistic services.

These findings suggested that skill development in the application of extension

principles and sustainable livelihoods strategies in nutrition research and practice should be included in training programs for nutrition professionals.

As part of the capacity building objectives of the ENAM project, the management team proposed the development of a nutrition extension curriculum for the Department of Nutrition and Food Science at the University of Ghana. A step-by-step process was undertaken to develop the course. First, an internet search was conducted to identify existing university course materials and curricula that could be adopted or adapted at the University of Ghana. The search revealed that, unlike agricultural extension, universities did not have nutrition extension as a program of study; no university offered an undergraduate degree or coursework in nutrition extension.

The ENAM management team next met with a U.S. consultant who was a nutrition extension specialist to discuss training of nutrition extension service personnel. During the consultancy, a seminar was offered to discuss U.S. experiences in nutrition extension and initiate the
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First “Nutrition, Sustainable Livelihoods and Extension” Course Offered

discussion about curriculum needs among the local academic and program stakeholders. Discussions led to the consensus that a course should be developed that would introduce students to basic principles of extension and participatory strategies and their relevance to nutrition. It was deemed necessary to interact with current nutrition extension practitioners and community-based and other stakeholders to obtain their input on what the course should look like given the realities in the field.

Following the consultation, a two-day workshop was held in July 2006 to obtain wide stakeholder input in the designing of an overview course that would introduce students with professional interest in community nutrition or nutrition extension, to key concepts and methods in the nutrition extension field. The meeting was attended by 23 participants from the University of Ghana (Departments of Agricultural Extension, Nutrition and Food Science, Home Science, Public Health, and Animal Science), governmental organizations (Ghana Health Services, Ministry of Food and Agriculture, and Rural Health Training School) and non-governmental organizations (Adventist Relief Agency, Plan-Ghana, Freedom from

Hunger, World Vision, and Christian Rural Action Network). The outcome of the workgroup meeting was a list of recommended topics that should be covered in the course.

The course topics recommended by the workgroup participants were organized within the context of the sustainable livelihoods framework. The broad topic areas described in the course outline are: basic concepts in nutrition (including foods and their food values, food hygiene and preservation, nutrition and the life cycle); nutrition and livelihoods; malnutrition, food insecurity and livelihoods; role of extension in nutrition; qualitative assessment tools for understanding nutrition and food insecurity issues within the sustainable livelihoods framework; and improving nutrition through behaviour change. The course outline includes the use of the ENAM project as a case study for student learning.

A proposal for the course was developed and was first circulated among faculty members of the Department of Nutrition and Food Science for their review. Following this, the course proposal was presented at the Faculty of Science Board meeting, comprised of the Dean of Science and all heads of the 11 departments of the

Faculty of Science, and their representatives. After the Faculty Board approved the course, the course proposal was submitted to the University Academic Board for final approval. In March 2007, the Academic Board approved the “Nutrition, Sustainable Livelihoods and Extension” course as a level 300 (for third year undergraduate students), two-credit course to be offered through the Department of Nutrition and Food Science.

During the development of the undergraduate course, stakeholders also recognized the potential value of a short-course that would target frontline staff of health, nutrition, and agriculture-related governmental or non-governmental organizations. The short-course for professionals is currently under development and is a collaborative effort between the Departments of Nutrition and Food Science and Agriculture Extension at the University of Ghana, the Ghana Health Services, the Ministry of Food and Agriculture, and related non-governmental organizations such as Heifer Project, ADRA and Freedom from Hunger, Ghana. The short-course is expected to be developed by September 2008. 📖

For more information about the ENAM project or the courses, please contact Grace Marquis at grace.marquis@mcgill.ca.

A Must Read for '08

Changing Livelihoods, Risky Environments: Social and Economic Change among Pastoralists in East Africa

By John McPeak, Syracuse University, and Franklin Holley, University of California-Davis

John G. McPeak, Peter D. Little, Cheryl R. Doss, and Christopher B. Barrett are co-authoring a new book based on their work with the Pastoral Risk Management (PARIMA) project. The book, scheduled for publishing in 2008, is entitled *Changing Livelihoods, Risky Environments: Social and Economic Change among Pastoralists in East Africa*, and provides insights into how pastoral livelihood strategies operate currently and how they have changed over time. By presenting evidence on the ways in which people view the risks they face and their priorities for future community development, the authors are able to identify patterns from within and across households and communities based on empirical research conducted by the PARIMA project.

Changing Livelihoods, Risky Environments will be an important new publication given pastoralists' centrality to many environmental, security, economic and humanitarian concerns on the continent, and the critical need for donors, policy makers and other researchers to obtain a detailed understanding of

contemporary pastoralism. This compilation is the first interdisciplinary attempt to document how pastoralists and their communities have responded to an increasingly risky environment marked by climatic disturbances, armed conflicts, liberalized markets and politico-economic instabilities. These are important but infrequent events in the lives of the pastoralists; however, the authors argue that there is much to learn from understanding the pastoralists' adaptations to change and their behavior in non-crisis periods, which draw comparatively little attention.

The book's main premise is that notwithstanding the considerable, multidimensional

risk's pastoralists face, livestock are and will remain the foundation for livelihoods in the region for the foreseeable future. Animal husbandry represents the most economically efficient use of East Africa's rangelands, and is thus a crucial element of any viable strategy to support the livelihoods of the tens of millions of people in the arid and semi-arid land (ASAL) areas of Ethiopia and Kenya. Consequently, pastoral risk management today is about how herders can cope with increased economic and environmental pressures without jeopardizing their key non-human asset, livestock. The evolving strategies for accomplishing this within the given constraints are key subjects of the book.



The GLCRSP book will be the first interdisciplinary endeavor to document how pastoralists have responded to an increasingly risky environment marked by climate change, conflict, liberalized markets and political instabilities. Photo by Chris Barrett.

While addressing the centrality of livestock to pastoral systems, *Changing Livelihoods, Risky Environments* makes clear that the animals themselves are of secondary concern to elementary human needs. This conclusion is the result of PARIMA research into the concerns and preferences of pastoralists showing that most pastoralists tend to
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GL-CRSP PEACE Project Develops LEWS/LINKS in Afghanistan

assistance as others in the post-Taliban period. The PEACE Project aims to enhance the productivity and sustainability of the livestock sector through the development and integration of early warning, nutritional profiling, and market information system technology, along with the strengthening of herder alliances among Kuchi pastoralists, the main stakeholder in Afghan transhumance livestock production.

To date, the PEACE Project has conducted vegetation surveys in 10 Provinces to acquire data critical for initial simulation runs of the early warning system model. In addition, the first feeding trials for the calibration of the Near Infra-Red Spectrometer (NIRS) equipment have been completed. NIRS technology is an innovative method for the assessment of animal

Young children in Char Dara in the Kunduz Province of Afghanistan. Early warning and market information systems provide herders and their families an opportunity to react to life threatening events and mitigate risk. Photo by Michael Jacobs.



nutrition and forage quality. By projecting near infra-red light on a forage or fecal sample and calculating the NIR wavelength absorbed, researchers can determine the amount of crude protein and digestible organic matter available to livestock. The GL-CRSP GOBI Forage Project has successfully incorporated NIRS technology into a mobile laboratory in Mongolia, allowing project researchers to provide herders there with an immediate nutritional assessment. Training for six Afghan technicians

and members of the PEACE Project in NIR technology was conducted over a 10-day period by members of the Texas A&M GOBI Forage team led by Dr. Doug Tolleson in the fall of 2007.

As the PEACE Project moves into its third year, activities are increasingly focused on the launch of the coordinated early warning market information systems, and the integration of “early warning” advisories with community outreach, NGO, and Afghanistan ministries to facilitate the efficient delivery and use of the information. The Project website will combine with AM radio broadcasts to distribute forage and market information to policy makers, government agencies and NGOs, enabling the dissemination of forage and market information to herders. As in East Africa and Mongolia, information on forage availability and market prices will allow herders to

(continued on next page)

Potential New Species Discovered

During vegetation sampling and identification activities conducted in March of 2007, GL-CRSP PEACE Project collaborators Drs. Bernhard Dickore and Helmut Freitag, and Toby Spribille, of the University of Göttingen, Germany identified a potential new species. The specimen is a member of the genus *Ochtonophila* of the *Caryophyllaceae* family. The genus of *Ochtonophila* currently contains only three additional species, all native to Afghanistan. The discovery and catalog of new species of vegetation, and the building of Afghan capacity to collect plant specimens for research is especially critical in Afghanistan, where all herbariums were destroyed under the Taliban. The Afghan PEACE Project is collaborating with the Afghan Ministry of Agriculture, Irrigation, and Land (MAIL) in its efforts to re-establish an Afghani herbarium.

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A Must Read for 2008: Changing Livelihoods, Risky Environment

favor development interventions that address basic human needs: access to safe water, health care, and education. This important information has clear implications for subsequent development design and focus in the region.

McPeak, et al's new book is especially noteworthy for the empirical data rich in both depth and detail over time. Investigators collected individual level survey data quarterly from 2000-2002 and annually from 2004-2006, as well as community level data monthly from 2000-2006. Survey results yielded patterns

of well-being and inequality in the study sites, the emergence of new livelihood strategies, marketing patterns and mechanisms and institutions for managing risk, and intrahousehold variation in well-being and perceptions based on differences in gender and status.

Changing Livelihoods, Risky Environments also presents longitudinal data capturing both drought and post-drought periods over ten years, 1997-2006; along with spatial and cross-cultural coverage spanning several different

ethnic groups and extending well beyond cultural, market and agro-ecological conditions. Such rich data allows the researchers to make comparisons both across and within communities and households, in order to illustrate poverty dynamics and economic change in the area. Collectively, the information can be used to better target policy and improve project interventions as well as understand the diverse experiences of common phenomena. 🌱🌱

For more information on the book, please contact John McPeak, jomcpeak@maxwell.syr.edu.

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make informed decisions on herd migration, increasing their capacity to sustainably manage rangelands and increase livestock productivity.

The PEACE Project has recently proposed the organization of a planning initiative entitled "The State of Afghan Livestock in Development," to investigate livestock issues in Afghanistan in an attempt to better understand the Afghani livestock sector, and to begin discussions about the direction and opportunity for investments to support future development. The GL-CRSP sponsored initiative is designed to provide: 1) a synthesis of literature and update of programmatic activities in the Afghan livestock sector;

2) a workshop documenting strategies to enhance and expand the sector; 3) the development of pilot projects to improve understanding of the role of increased productivity in the livestock sector on development; and 4) a concept paper to engage stakeholder groups in a discussion on the role of livestock for enhancing nutrition, and increasing household income and national economic growth. The synthesis and workshop components of the PEACE planning initiative are tentatively scheduled for May 2008. 🌱🌱

For more information on the PEACE project, please visit <http://afghanpeace.org> or contact the GLCRSP office, glcrsp@ucdavis.edu. For a related story on the GOBI Forage project in Mongolia, turn to page one of this newsletter.

Publications Available

For copies of publications, contact the Management Entity of the Global Livestock CRSP, University of California, Davis, Davis CA 95616. Email: glcrsp@ucdavis.edu. Publications are also available for download at the GL-CRSP web site: <http://glcrsp.ucdavis.edu/publications>.

Publications currently available for download include:

GLCRSP/World Bank Report
2006 Annual Report
2007 ENAM EEP Report
GLCRSP Program Briefings

These briefings are a three-part series on the development and evolution of the GL-CRSP, featuring research results and impacts at the global, regional, national, and local levels.

Research Briefs

New briefs from the following projects: GOBI Forage, PARIMA, SUMAWA, LiTEK and ENAM.

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US Embassy and USAID Mission Recognizes Impact of GLCRSP GOBI

has been dramatic”. Many of the herders, provincial administrators, and technical specialists that were originally skeptical about the feasibility of obtaining accurate forage prediction maps are now impressed by the high quality predictive capacity of project technology and efficient information dissemination protocols.

According to the cable, “an increasing number of government officials are using Gobi Forage radio broadcasts to obtain information about pasture conditions and to

guide their recommendations on livestock movements.” Some 93% of government

The ability of the project...to produce current and accurate maps showing forage conditions 30 and 60 days into the future, has proven exceptionally valuable to herders and those with a stake in rangeland management. It has also had a tranformational impact on the thinking of Mongolian Government Ministries and donors working in rural development sector.

March 2008 Cable, US Embassy Mongolia

officials who use Gobi Forage products now indicate that those products are “very useful” for their work. One provincial governor described how the system helped him manage the influx of some 50,000 herders and their families from a neighboring drought-stricken province and prevent conflict with local herders. While perceptions of the accuracy of the forage information vary widely among herders themselves, use of the technology is increasing, with almost 50% of herders claiming that the data had informed their decision-making.”

“It isn’t only the livestock raisers who benefited here.” Jeff Goodson, Senior Program Manager at USAID/Mongolia pointed out. Use of GOBI Forage technologies by soum (county) and aimag (province) officials has proved fundamental in the management of human populations and livestock across political boundaries during times of drought and harsh winter conditions. As

virtually all significant short-term movements of human populations are related to forage conditions, the map resources generated by the GOBI technology suite assist in pastoral migration management, greatly enhancing the capacity for improved natural resource management and institutional operation.

“The technology and its application has also transformed how some of the main government institutions responsible for agriculture -- including, but not restricted to forage monitoring--operate and, more importantly, how well they operate,” noted Goodson.

While USAID funding for the project is scheduled to end in April 2008, discussions are now underway with the World Bank to procure funding for an expansion of program activities and technologies beyond the eight aimags currently serviced by the project, and to transfer project research and management from Texas A&M and Mercy Corps-Mongolia to a Mongolian government agency.❤️

For more information on the GOBI Forage project, please contact Jay Angerer, jangerer@cnrit.tamu.edu. The complete cable from the Embassy in Mongolia can be accessed at the GLCRSP website, <http://glcrsp.ucdavis.edu>.

Ruminations

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