

**Developing a Cooperative Extension System for  
Forest Products and Forestry Systems in Honduras**

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## **Abstract**

In 1998 Hurricane Mitch battered Honduras, uprooting over 1 million people from their homes. Because the forest products sector is a significant part of the Honduran economy, the Louisiana State University Agricultural Center developed projects designed to assist the sector more quickly recover from the devastating impacts of the hurricane. One project we developed was an extension framework with the Honduran National School of Forest Science (ESNACIFOR).

In this paper, we outline our observations and recommendations regarding developing a more comprehensive extension/outreach program for ESNACIFOR. This methodology could be useful in examining outreach potential in other developing countries as well.

## **Introduction**

In late October 1998, Honduras suffered severely from Hurricane Mitch, one of the largest category 5 hurricanes ever. The Government of Honduras estimates that more than 8,000 people died due to the hurricane and over 1 million people were uprooted from their homes or livelihoods. Beyond the human misery that was caused, Hurricane Mitch also impacted the country's forest sector. Vast areas of trees were leveled and the raw material availability for domestic processing was disrupted. One effort to address post-Hurricane Mitch forestry problems was the formation of a forestry and forest products sector project that was part of the Louisiana Alliance/Presidential Program for Investors in Honduras (ALIANZA). The project was conducted by a team from the Louisiana State University (LSU) AgCenter, School of Renewable Natural Resources and the School of Human Ecology. The project was primarily a technical knowledge transfer effort funded by the United States Agency for International Development (USAID) focusing on forest products utilization and processing, economic and rural development, marketing and business development, social dimensions, and value-added wood processing. There has also been an initiative to work with the Fundacion para la Inversion y Desarrollo de Exportaciones (FIDE), a private, non-profit institution created to promote investment in Honduras, in prioritizing the organization's efforts (Dunn, et al 2003). The LSU AgCenter team of specialists is working with counterparts in Honduras in each of these areas.

One of the projects undertaken by team members was to develop an extension framework with one of the counterparts, the Honduran National School of Forest Science, known in Honduras as *Esuela Nacionnal de Ciencias Forstales* (ESNACIFOR). ESNACIFOR forms an important linkage in the productivity of both the Honduran forest and the forest products sector. As its flagship national forest science academic organization, ESNACIFOR is responsible for the training and education of future forestry, forest products, and natural resources management graduates, research into forestry and forest products areas, and extension programs designed to foster forest development and protection in Honduras.

The authors of this paper and the Executive Director of ESNACIFOR, Ing. Manuel Hernandez Paz, agreed that it would be beneficial to produce a document outlining a possible course of action that would allow ESNACIFOR to more completely fulfill an extension/outreach program in Honduras. This paper outlines the authors' thoughts and recommendations regarding developing a more comprehensive extension/outreach forestry and wood products extension program in Honduras through the ESNACIFOR infrastructure. This methodology could be useful in examining extension/outreach potential in other developing countries as well.

## **Background**

Honduras is similar in size to Louisiana, 112,000 square kilometers, with an estimated population of 6 million people (U.S. Department of State 1999). Of this area, approximately 4.5 million hectares (or about 40 percent of land area) is forested (Canadian International Development Agency 1997). Pine forests dominate the central highlands and the savannas of Mosquitia. Hardwood forests are prevalent along the Caribbean coast, the eastern lowlands of the Patuca River watershed, and the Agalta Mountains.

Honduras' forests are a critical component of its economy and environment. The forests provide income to people and local communities, as well as to the larger cities, through the harvesting, transportation, and transformation of trees into primary products, and through further refining and manufacturing into secondary value-added products. Forests also provide

environmental protection in the form of enhanced air and water quality and ecosystem diversity. Ecotourism will almost certainly play an increasingly important role in the Honduran economy.

Honduras faces challenges if it is to protect and utilize the forest resource and its diverse products. Currently, deforestation through extensive agricultural practices converts forestland to agricultural uses at an alarming rate (Aguirre, et al 1998). According to the Canadian International Development Agency, Honduras has the highest population growth rate in Central America, at 3.5 percent per year. A rapidly increasing population puts tremendous pressure on the forest resource as they demand more food and fiber products while at the same time convert more land away from forests and into subsistence agricultural and living space. Honduras also faces problems with its land tenure system. Its inability to enable and enforce well-defined property rights leads to forest destruction and unsustainability.

Honduras' challenges, while great, are not insurmountable and, in fact, are not that different from the challenges faced by any developing nation. Indeed, the United States was once a developing nation faced with myriad problems leading to deforestation. Although many factors have gone into developing and protecting the forest resource in the U.S., one stabilizing factor has been the leadership role taken by cooperative extension systems through land grant universities. From humble beginnings, extension systems have helped to "bring the university to the people" and provide local citizenry with critical research and development information that greatly assists in reaching management and conservation goals. Extension professionals in the U.S. can and do work at the local level with local communities in better developing forest resources, management plans, and utilization strategies. They develop and implement educational programs, demonstrations, and activities to teach people the best management and conservation practices. Extension professionals also facilitate policy and law development by taking a leadership role in coordinating and developing relationships among stakeholder groups and government representatives. In short, a cooperative extension system, as its name implies, works through and with many diverse groups to facilitate and transmit the exchange of information and ideas from experts to stakeholder groups. It is a system that has had success in the United States as well as in other parts of the world and can work in Honduras as well.

Extension theoreticians and practitioners alike have debated which extension models are successful and which are most likely to succeed in developing nations. Rivera (1990) states that this points to the complexity of extension systems. Indeed, extension systems, because of their cooperative nature and because of the diverse environments within which they work, can be very complex.

Several different extension models emerge as possible working examples for the Honduran forest sector, each with its own set of strengths and weaknesses. The United States model, when applied to other countries, has had mixed successes (Claar et al 1980), probably because of differences in academic institutions and priorities in those other countries when compared to the U.S. land grant system.

Other systems have been developed in other countries more specific to their agricultural sectors. For example, Taiwan developed a "Farming Information Dissemination System" that claims to be an alternative to the land grant university system (Lionberger and Chang 1981). Farm extension systems, however, are not always appropriate for extension systems targeted at forest management and conservation because of the time frames involved in the latter.

The World Bank's Training and Visit Extension Management Model follows explicit protocols, including requiring agents to work on extension projects exclusively, linking extension closely with research with continuous in-service training for agents, time constrained

work production, and an orientation to field activities and results (Leonard 1986). This model is somewhat similar to the U.S. model; thus, it benefits from many of the same strengths (strong relationships between research and extension and the potential for rapid dissemination of information) and suffers from some of the same weaknesses (relatively large funding requirements).

Beavers (1985) points out that extension systems outside of the United States tend to be organized as a unit of Ministries of Agriculture of the government. Therefore, relationships must be built with appropriate universities. In Honduras, ESNACIFOR is a hybrid of the typical non-U.S. and U.S. systems, for it is a university that conducts research, teaching, training, and some extension functions; however, it is under the auspices of COHDEFOR, the Honduran government institution that manages and oversees the country's public forestlands.

In truth, any system will have its strengths and weaknesses and those will vary depending upon the unique experiences of the sponsoring nation. What we will propose for a forestry/forest products extension system in Honduras is one based on the successful system developed in Louisiana by the Louisiana State University Agricultural Center.

### **Background on the LSU AgCenter Forest Sector Extension Program**

The State of Louisiana has many characteristics that are similar to the country of Honduras in terms of the importance of the forest sector to the state's economy. Accordingly, the Louisiana Cooperative Extension Service at the LSU Agricultural Center served as a beginning point for our development of an analogous structure in Honduras. In Louisiana, the forest sector is the state's largest agricultural sector in terms of total value contributed to the state economy. Over 2/3 of the state's area is forested; much of that area is controlled by non-industrial private forest landowners, all managing timber to varying degrees of intensity. It is critical in Louisiana that we work with these landowners as well as with private sector industrial landowners and public sector land management agencies to help insure that the forest resource and its many goods are protected and enhanced not only for today's demands, but also for tomorrow's demands as well.

Specifically, the forest sector portion of the LSU AgCenter's Extension Natural Resources Program is charged with the following mission priorities:

1. Working with and educating forest landowners regarding proper forest management techniques to increase forest productivity.
2. Working with and educating forest landowners regarding alternative management strategies that reflect the landowner's goals with respect to the forestland.
3. Working with and educating forest landowners regarding the latest technological innovations that increase forest productivity.
4. Educating forest landowners regarding the latest public policy information (regulations, rules, restrictions, procedures, etc) so that they stay abreast of the information necessary to manage and protect forests per local, state, and federal regulations.
5. Educating forest resource managers such as industry foresters, forest consultants, and public sector forest managers and policymakers through continuing education programs designed to keep these participants abreast of the latest technological developments and advances in forest management.
6. Developing leadership in natural resource constituencies and stakeholder groups through programs designed to increase awareness and promote renewable aspects of forest and natural resources management.

7. Educating natural resource stakeholders regarding wildlife management opportunities on forestland.
8. Developing and implementing programs to educate wood products personnel regarding lumber drying and wood utilization technologies.
9. Educating members of the logging profession regarding equipment safety, technological innovation within the profession, and developing an understanding and appreciation for the implementation of recommended harvesting and transportation practices designed to increase forestland quality and conservation.
10. Servicing urban and rural property owners regarding their urban tree problems through education programs, literature, and telephone consultations.

### **Applying the LSU AgCenter Model in Honduras**

The strength of the Extension Natural Resources system in Louisiana is its comprehensiveness and its presence. Our agents are strategically located throughout Louisiana and have a coverage area that encompasses most of the forested areas of the state. Our specialists reside at the main Louisiana State University Campus, where they have access to the latest research and experimental information. They then work with the area agents to disseminate this information. The area agents, therefore, become the conduit through which technology is transferred. The system has worked very well for us for over twenty years.

The system's greatest weakness, were it to be applied to Honduras, is its potential cost. Maintaining such a system in Honduras would be expensive. Whereas Louisiana has a per capita gross domestic product of \$28,000 per person, Honduras' per capita gross domestic product is \$800 per person. The ENR program in Louisiana is funded approximately 40 percent by the United States Federal Government and 60 percent by the State of Louisiana. Local area governments assist by providing area agents with office facilities. This type of system will likely be more challenging to institute in Honduras because Honduras simply does not have the same level of resources currently available to it as does the United States.

However, it is a worthy system and a modified version of it could likely be instituted in Honduras. For example, such a system could be instituted as a pilot program in Honduras, on a smaller scale, with perhaps one or two area agents and one or two key specialists supporting them from ESNACIFOR headquarters. Opportunities exist for external support to develop and enhance such a system. Once the pilot program shows success there will likely be opportunities to expand the system into other areas until the country is adequately covered by area agents and supported with enough specialists on the ESNACIFOR campus.

Specifically, consideration should be given to the following recommendations for developing a more comprehensive forestry and forest products extension system in Honduras:

1. Secure funding through internal and external sources. Internal sources would primarily include the Honduran government, but should also include the Honduran forest products industry and other stakeholder groups. A funding system needs to be instituted that provides ESNACIFOR with enough funding to start an extension system as a pilot project. A likely good start would be to institute one area agent in the pine forest region and one area agent in the hardwood forest region in Honduras. Funds would likely be needed to provide for an office and possibly housing for these area agents. Specialists would need to be hired by ESNACIFOR to assist the area agents by establishing demonstration forest areas and applied research programs. Funding matches for these sorts of programs could be sought from in-kind support from local areas. For example,

local governments or villages could assist ESNACIFOR by donating office space and/or living space to the area agents. The Honduran government could donate land in those areas for research and demonstration areas. External funding support could be sought through such agencies as USAID and other international aid agencies or NGO's to assist in developing the program. Nothing works like success, however. If ESNACIFOR can develop a successful pilot project with funding provided internally, it should become much easier to secure external funding through grants.

2. Hire qualified agents and specialists. ESNACIFOR will need agents particularly suited to working with local people. Agents need to be technically competent and possess good communication skills. Agents must be willing to undergo constant in-service training at ESNACIFOR and other facilities (perhaps conferences in the United States, other countries in Latin and South America, or abroad, for example) to learn more about not only forest management and forest products operations, but also extension and outreach development methods. Specialists should possess Ph.D.s or equivalent degrees and be technically proficient in areas essential to fulfilling the extension mission. Also of critical importance will be specialists' grant writing abilities. Specialists should be relied upon to engage in grant writing to assist in funding the projects they will develop. The ability to hire good, qualified agents and specialists hinges in part on the ability to pay those agents and specialists. Therefore, it is imperative that a commitment be made to funding these positions on a sustainable level at competitive rates.
3. Develop intimate relationships with potential cooperators. No extension system anywhere in the world can be successful without close collaboration with cooperators. Critical to ESNACIFOR's extension effort will be collaboration with the ZAMORANO and CUPROFOR. ESNACIFOR should develop close relationships with researchers at ZAMORANO to develop applied research projects specific to forest management and conservation in Honduras which can be transferred to people around the country through extension agents. Likewise, CUPROFOR is well-equipped to conduct research into wood physical properties and potential uses as well as the development of lumber drying and wood gluing techniques. A close relationship between ESNACIFOR and CUPROFOR with an eye toward developing extension strategies and programs would greatly strengthen the extension program in Honduras. Other cooperators would include the various NGO's currently operating in the country, COHDEFOR, FIDE, various social services and rural development groups, private forest industry, and local representatives around the country. By fully developing these partnerships, the extension effort and system of demonstrations and education can be greatly enhanced, making for a rich experience for both the area stakeholders and the agents supporting them.
4. Development of educational materials and workshops that are delivered at the local level. Instead of much of the effort being expended only at ESNACIFOR's campus, the extension effort, through area agents, should concentrate on program delivery at the local level. True outreach must begin at the local grassroots level. Through this sort of approach, more people are reached in their native environment and find better ways to apply the education and training materials.
5. Develop a system of accountability and responsiveness. Key to any extension system is maintaining relevance at both the local and national levels. An accountability system should be put in place to assure that ESNACIFOR's extension program stays on the right track and remains a vital and relevant program for Honduras. One of the best ways to

accomplish this is to develop an advisory committee to which the extension program reports results and seeks direction. Such a committee should be composed of representatives of diverse stakeholder groups, such as local forest managers and owners, industry leaders, NGO's and environmental stakeholders, government officials, and members of academia. It is important that the advisory committee not be so large that it becomes too cumbersome to be efficient, but it should be large enough so that all different stakeholder groups are represented. ESNACIFOR could hold advisory committee meetings both on its campus and in the local areas where it conducts business. Periodic feedback at the local level is essential to maintaining cooperation among local cooperators and stakeholders. At the same time, ESNACIFOR's extension program must be accountable to its nation and international donors. Therefore, a strong system of accountability grounded in the advisory committee system would allow ESNACIFOR to report its progress and successes while maintaining close ties with stakeholders.

**A Budget Example: Approximate Costs of the Extension Natural Resources Program in Louisiana**

What follows is an example budget for operating the ENR program in Louisiana. Note that this does not include all specific costs for infrastructure like telephone lines, buildings, internet connections, and the like (those were included in the 40 percent overhead figure). However, it should provide ESNACIFOR with some examples of what kinds of expenditures are made in Louisiana and ESNACIFOR's administrators can adjust this budget and/or add/subtract from it as necessary and appropriate for Honduras.

**ENR Budget**

<b>Type of Expenditure</b>	<b>One-time or recurring</b>	<b>Amount</b>
Specialist Salaries (on average, \$55,000 per person X 4 people, not including fringe benefits)	Recurring	\$220,000
Area Agent Salaries (on average, \$40,000 per person X 5 people, not including fringe benefits)	Recurring	\$200,000
Administrative assistants and secretaries (five secretaries and administrative assistants located throughout the state)	Recurring	\$100,000
In-State Travel (approximately \$2,000 per person)	Recurring	\$18,000
Out of state and international travel (conferences and workshops)	Recurring	\$7,000
Computers and Printers (periodically updated, approximately once every 5 years)	One Time	\$18,000

<b>Type of Expenditure</b>	<b>One-time or recurring</b>	<b>Amount</b>
Miscellaneous Office Supplies	Recurring (annually)	\$2,000
Production of papers, brochures, educational materials, and other miscellaneous publications	Recurring	\$12,000
<b>SUBTOTAL</b>		<b>\$577,000</b>
Miscellaneous overhead (fringe benefits, operating expenses for buildings and vehicles, internet and telephone infrastructure, building maintenance, etc. Calculated as 40 percent of the subtotal)	Recurring	\$230,800
<b>GRAND TOTAL</b>		<b>\$807,800.00</b>

### **Conclusion**

We have presented here a description of various extension models that are currently used either in part or in whole around the world. We have also presented the extension model for forestry and forest products currently in place at the Louisiana State University Agricultural Center in Louisiana: the Extension Natural Resources Program. We have described ways in which this model could be adapted and utilized in Honduras and made some recommendations for how this might be accomplished and what steps should be taken to insure the model's success in Honduras.

This recommendation for further development of a more comprehensive and intensive forestry/forest products extension system in Honduras should work as long as there is a substantive long-term commitment from the Honduran government, willing cooperators and participants, and the Honduran people. An extension system is not a short term remedy and typically does not show short-term results, particularly when working with forest systems and enterprises, which operate on a much longer rotation than typical agriculture systems. The Honduran government, ESNACIFOR, cooperators, internal and external donors, and stakeholder groups must develop the determination to make this a long-term successful program. Through intensive effort, dedication to excellence, an honest desire to help local communities and the country as a whole, funding willpower, and a long-term view of success, ESNACIFOR and Honduras can develop a program that will make a difference in the general welfare of Honduras.

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