

THE EXCHANGE

SUSTAINABLE APPLICATIONS FOR A DEVELOPING WORLD

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Building Sustainable Food Systems through Agroecology

By Jim Hoey, Director of Environmental Strategies
for Heifer International

The Autonomous University of the Yucatán hosted this year's International Agroecology Short Course from June 29 to July 12 in Mérida and Tzucacab, Yucatán, Mexico. Over 50 people from six countries attended the 9th annual event which focused on the integration of indigenous and local agroecological farming knowledge systems for sustainable rural development. The University of California Santa Cruz is the originator and main sponsor of the Annual International Agroecology Short Course, with Dr. Steve Gliessman as the main contact. Dr. Gliessman wrote the acclaimed textbook *Agroecology - The Ecology of Sustainable Food Systems* (CRC Press 2nd ed.). Through the support of the Environmental Strategies Office, Heifer International has been a sponsor of the short course for the last three years. Among the participants were a total of 10 Heifer staff and project partners that attended with goals of enhancing skills and knowledge regarding agroecology for sustainable rural and livelihood development and learning about agroecological networking and policy change opportunities.

The short course was divided into five main themes:

1. Traditional Agriculture and Livestock

Systems in Mexico

2. Agroecological Conceptual Framework
3. Participatory Action Research and Education (farm and community)
4. Agroecological Program and Public Policies in the Yucatán
5. Generating Sustainable Food Systems (locally produced food marketed directly)

Lectures posed agroecological concepts and principles with time allotted for small group discussion and feedback. Nearly half of the activities involved hands-on field visits to farm families and local research and learning organizations with historical connections to Mayan cultural traditions. Participants learned and discussed tangible ways agroecology could be used in their home communities to encourage the development of sustainable food systems that would eventually influence local, national and international policies. Discussions included several presentations with a focus on ways to use agroecological practices to lessen global and regional economic influences and face the challenges of changing weather patterns.

In addition, each participant and organization was given the opportunity to share a brief presentation about their personal experiences with programs related to agroecological activities. A Q&A session



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Conference participants enjoying an all local foods meal during a field visit

followed each presentation and facilitated further networking and exchanges of information. Many participants agreed to maintain contact through an Internet networking site.

Through many field visits in the Tzucacab, Yucatán area, participants had firsthand experience of the dramatic effects of increasing corn and soybean prices. Even in the extremely rural and remote town of Tzucacab, two hours southwest of Mérida, the price of hog feed concentrate had more than doubled in one year, but the profits farmers receive for their hogs had barely changed. Several local men and women shared touching testimonies that they could no longer engage in the traditional practice of purchasing young piglets twice a year and raise them for sale. Local farmers with access to land plan to grow more corn in order to benefit from its profit potential. Despite short-term benefits, this plan will ultimately put more pressure on the soil and environment, as most families still engage in the traditional practice of slash and burn as a method for planting crops.

A pig and bull farmer who has stopped buying and raising piglets said she intends to purchase and raise more young bulls since they can subsist mainly on forage. The price of forage has not risen and is

readily available to cut and haul to their Tzucacab home. Previously, she purchased and raised two or three bulls at a time, but now her family will purchase four to six additional young bulls easily attained nearby at a reasonable price. In the upcoming planting season, her husband plans to grow more corn on their small farm located several kilometers outside of town because the price of corn is on the rise. The recent rise in chemical fertilizer use in the area poses an added risk.

One field visit introduced participants to a father and son team who have a joint farm operation with a mixed farming system of corn, vegetables, fruit trees and a medium sized hog breeding operation on just over 20 hectares (44 acres) of land. They are working with the local extension program of the Autonomous University of the Yucatán to gradually convert their farm to a more environmentally friendly system based on agroecology. High feed costs affected this operation, too, forcing them to sell 15 brood sows earlier this year. They kept five of their best sows, but there weren't enough buyers for all of the piglets. In conjunction with the university, the duo adopted a brood sow pasture system a year ago. This system has reduced the feed concentrate consumption in their hog operation by nearly half, enabling them to survive the increase in feed concentrate

costs. They are also working with the university on ways to produce most of their own grain for the hogs in order to reduce off-the-farm purchases. The father and son have adopted the practice of drying hog manure to use as organic fertilizer.



Young piglets on farm of father & son mixed farming systems operation

Previously, due in part to the low cost of chemical fertilizer, manure was not considered an important part of their farming system. Since using the manure, their use of chemical fertilizer, which had dramatically increased in cost by nearly 50% in less than a year, has significantly decreased. Additionally, captured hog urine and water used to clean the cement floors of their hog operation is now used as liquid fertilizer on the hog pastures. The pasture is primarily pangola



Intercropping of corn and squash

grass, and there are now plans to explore the use of legumes for forage. New methods of raising their own piglets until market size by putting them out to pasture thus decreasing the amount of hog feed required, are also being discussed.

The last three days of the short course focused on the general theme of “Generating Sustainable Food Systems.” Several of the presentations concentrated on some basic issues related to the concept of food sovereignty that contribute to sustainability, such as the reduction and eventual elimination of fossil fuel based chemical inputs, increased food security and access to local seeds and land to produce culturally accepted food and the direct marketing of farm products. Other topics presented included the high costs associated with international organic certification versus locally organized self-regulating certification for organically produced food products and the importance of using mixed farming systems that include both livestock and food production to mitigate the effects of changing weather patterns.

Dr. Gliessman, in his final presentation, “Sustainable Food Systems: Challenges and Opportunities,” addressed the question of indicators of sustainability in food systems based on agroecology. He particularly emphasized the importance that any research must be done on the farm in a participatory manner, including close association with the farmer. A Declaration Statement was read and agreed upon by the participants in attendance. It echoed the paramount importance of enlisting all local, national and international public and private organizations and rural and urban communities to support an agroecological approach to agriculture. Such an endorsement will bring the changes to create sustainable food systems in local eco-



Dr. Steve Gliessman, University of California Santa Cruz Campus & Santiago Chan Osorio, Heifer Mexico staff

nomically viable and ecologically sound communities based on social equity and empower people to overcome hunger, poverty and climate change.

For further information related to agroecology, case studies and organizations promoting agroecology, including universities, research centers and NGOs (including Heifer International), please visit the University of California Santa Cruz Campus Web site at: www.agroecology.org.



AGROECOLOGY DEFINED

- *Webster's New Millennium Dictionary of English* defines agroecology as the science of ecology applied to the design, development and management of agriculture.
- Heifer International defines agroecology as socially, economically and ecologically sustainable agricultural production achieved through the management of natural resources to provide food and other products to restore and regenerate environmental functions and ecosystem integrity that protect the biosphere.



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The Heifer International Exchange Newsletter is the quarterly publication of Heifer International devoted to sustainable practices and applications in developing areas.

The ideas and opinions expressed are those of the authors, not those of Heifer International as an organization.

All readers are invited to contribute. We welcome your sharing of ideas and experiences with us. Subscriptions are free; donations are greatly appreciated.

Poverty plays a major role in the environmental problems of many countries. That's why Heifer teaches our project partners environmentally sound farming methods through agroecology.

About 10,000 families worldwide have benefited from Heifer's Agroecology Initiative, established in 2000, to place more emphasis on environmental protection as part of our work. Every Heifer project includes an environmental component that helps families raise their animals in harmony with nature and take steps to restore a balanced ecology.

To learn more about Heifer's approach to environmental sustainability through agroecology, visit the “Our Work / Initiatives” section of our Web site: www.heifer.org.



RESOURCES AND ANNOUNCEMENTS

Conservation Agriculture

Adapted from LEISA Magazine, no. 24.2, June 2008

In FAO's perspective, conservation agriculture requires a rich mix of expertise for its promotion. This site is put together by an informal work-group consisting of members from its Plant Production and Protection Division, the Land and Water Division, and the Rural Infrastructure and Agro-Industries Division. Conservation agriculture is presented as a way to achieve sustainable and profitable agriculture, and subsequently improved livelihoods of farmers. It revolves around three principles: minimal soil disturbance, permanent soil cover and crop rotations. The site provides a lot of technical information in English, French and Spanish, referring to economic aspects, the importance of cover crops, the use of machinery, the integration of crop and livestock enterprises, etc. It also includes links to other organizations, as well as information on coming events.

Web site: <http://www.fao.org/ag/ca>

Conservation Agriculture in Africa Series

Adapted from LEISA Magazine, no. 24.4, June 2008

This jointly facilitated series documents the current situation and lessons learned on conservation agriculture (CA) in Africa. It includes eight case studies with examples from Ghana, Zambia, Uganda, Kenya and Tanzania. The booklets provide insights and critical reflection on not only the benefits of CA but also the challenges confronting farmers, such as difficulties in keeping the soil covered, gaining access to equipment and weed control; as well as the challenges faced by insti-

tutions in implementing participatory approaches to CA technology. Downloadable PDF files available.

Web site:

<http://www.worldagroforestry.org/sites/relma/remapublications>

Community Media

Adapted from Spore, no. 134, April 2008

Free software packages are available to help community radios, newspapers and Web sites set up production and manage their business. The open source software packages are downloadable free from the Internet or can be sent as a CD-ROM for organizations with connectivity problems. The software is provided by the Media Development Loan Fund's Campware Initiative, and is already being used in several African countries including Liberia, Senegal and Sierra Leone. The Media Development Loan Fund (MDLF) is an international NGO specializing in improving media and publishing capacities in developing countries.

Contact: Douglas Arellanes by e-mail: contact@campware.org

Web sites: www.campware.org
www.mdlf.org

The Livestock Guru

Adapted from Spore, no. 134, April 2008

A touch-sensitive computer screen is helping Kenyan livestock owners to improve animal welfare and productivity. Dubbed the Livestock Guru, it is designed to be used by illiterate and literate farmers. Using images and information delivered by voice, the multimedia program offers guidance on how to prevent, diagnose and treat specific animal diseases.

Researchers at the University of Reading's Livestock Development Group developed the software package after a survey of more than 4,000 farmers on three continents identified lack of advice on livestock production, management and health as the biggest constraint to their livelihoods. The technology was launched in Bolivia and India and is now available to interested organizations in Kenya. In each country, customized versions have been tailored according to visual and linguistic requirements. The Livestock Guru is distributed through local community-based organizations, dairy and farmer associations to overcome problems of computer and power access.

Other related technologies include a mobile phone diagnostic system which enables farmers to take a photo of their sick animal and upload it to the computer to help obtain an accurate diagnosis. The program is succeeding in reaching some of the poorest farmers, including women, who are often marginalized from traditional extension delivery. Plans are in hand to launch a version of the service in South Africa.

Web site:

www.livestockdevelopment.org

TradeNet

TradeNet is a private company based in Accra, Ghana that offers a free information platform for farmers and traders to share market information globally, via mobile networks and the web. TradeNet works in partnership with public donor funded projects like USAID's Mistowa in West Africa and CGIAR's FoodNet in Uganda.

Web site: www.tradenet.biz

MATERIALS FOR EXCHANGE READERS

van de Kop, Petra, et al.
“Community Supported Agriculture: An Alternative Local Food System.”
[LEISA](#).

March 2008. vol. 24, no. 134, p. 32-34.

Community Supported Agriculture (CSA) is a marketing approach that encourages local, environmentally sustainable food production. This article explores successful CSA practices all over the world, including the Netherlands, Viet Nam and Mexico.

■ **Request No. 13101**

Butterworth, Bill.
“Strategies to Conserve and Manage Water Supplies.”

[Far Eastern Agriculture](#).
 March/April 2008. p. 12-13.

The global climate change crisis is forcing farmers to devise new agricultural practices, especially in water management. Select this article to learn about the different roles water has in farming and opportunities we have to conserve this precious resource.

■ **Request No. 13102**

North, Karl.
“Optimising Nutrient Cycles with Trees in Pasture Fields.”

[LEISA](#).
 June 2008. vol. 24, no. 2, p. 22-23.

Sustainable grassland farming in humid ecosystems is challenged by the leaching of soil nutrients below the root zone. Nature’s solution is a tree-dotted savanna—a system where deeper roots bring up leached minerals through leaf and fruit drop. Select this article to learn how to effectively imitate natural systems.

■ **Request No. 13103**

Nyendwa, Samson.
“Rearing Rabbits.”
[African Farming](#).
 March/April 2008. p. 15.

With a high rate of reproduction and inexpensive raising costs, rabbit farming makes an excellent family enterprise. Select this article to learn simple tips the entire family can use to successfully raise rabbits for meat and sale.

■ **Request No. 13104**

Muleme, Geoffrey.
“Organic Honey from the ‘Bee Belt’.”

[African Farming](#).
 March/April 2008. p. 18.

The Ugandan government is promoting bee farming as a viable way to increase household incomes. Select this article to learn how natural vegetation, such as sheanut butter trees, yields delicious honey, making this region perfect for bee farming.

■ **Request No. 13105**

Dr. Mabbett, Terry.
“Weppa Farm Forages a New Way.”
[African Farming](#).

May/June 2008. p. 17-22.

Select this article to learn how Nigeria’s Weppa Farm promotes sustainable growing options using a wide range of trees and crops, with a strong focus on eradicated indigenous species. A list of local trees and their uses is included.

■ **Request No. 13106**

Leo, Robert.
“Trees Bees Use: Sweet Tamarind.”
[Bees for Development](#).
 June 2008. no. 87, p. 9.

This article provides photos and information on the apicultural value, uses, characteristics and propagation of the sweet tamarind tree, or *Pithecellobium dulce*.

■ **Request No. 13107**

Critchley, William.
“Promoting Local Innovation in Rural Agriculture: Experience and Lessons for Urban Settings.”

[Urban Agriculture](#).
 December 2007. no. 19, p. 3-7.

This article explores opportunities associated with promoting local farmer innovation and knowledge exchange in rural agriculture. It provides various examples and lessons learned from several different communities.

■ **Request No. 13108**

“Home Herbal Gardens.”
[Endogenous Development](#).
 June 2008. no. 2, p. 12-15.

The Foundation for the Revitalization of Local Health Traditions (FRLHT) is promoting sustainable use of medicinal plants to meet the primary health care needs of the rural poor in India. Select this article to learn more.

■ **Request No. 13109**

“Plotting for Prosperity.”
 Spore.
 June 2008. no. 135, p. 8-10.

There are many benefits to community mapping: tracking drought and disease, planning land use, preserving indigenous knowledge and mapping hazards. Learn how this practice can help assert rights over resources and safeguard cultural heritage.

■ **Request No. 13110**

HEIFER MATERIALS REQUEST FORM


PLEASE PRINT PLAINLY your name and address in the space below.
Place a checkmark on the line corresponding to the articles you would like to receive.

NAME: _____

ADDRESS: _____

- 13101 "Community Supported Agriculture."
- 13102 "Strategies to Conserve and Manage Water Supplies."
- 13103 "Optimising Nutrient Cycles with Trees in Pasture Fields."
- 13104 "Rearing Rabbits."
- 13105 "Organic Honey from the 'Bee Belt'."
- 13106 "Weppa Farm Forages a New Way."
- 13107 "Trees Bees Use: Sweet Tamarind."
- 13108 "Promoting Local Innovation in Rural Agriculture."
- 13109 "Home Herbal Gardens."
- 13110 "Plotting for Prosperity."

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