“Hybrid systems” developed by smallholders as an underutilized resource

Miguel Pinedo Vasquez, Scientific Coordinator of PLEC
The global challenge of rural development

- provide food security
- reduce rural poverty
- reduce environmental degradation
- stem the erosion of biological diversity
Two paths to achieving global goals:

- Apply modern technologies and systems that have succeeded in industrialized countries
- Use “traditional” systems and technologies
Some problems with applying industrialized country solutions

- Tools and other inputs are expensive and most farmers can not afford them

- Modern systems are mainly developed for the production of a single crop and this exposes poor farmers to unacceptable risks

- Small farmers often farm areas unsuitable (slopes, flood-prone lands, etc.) for farming with developed country technologies
Problems with “traditional” systems. Many view traditional systems as:

- low-yielding, inefficient
- antiquated, bound by tradition
- non-adaptive and non-adaptable when facing economic, social, and environmental change
The result of these assumptions:

- reluctance of development and conservation communities to incorporate local agricultural practices

- the most important, available, resource of rural communities—knowledge—continues to be underutilized
What solutions does PLEC offer?

We identify, test, and promote locally-developed “hybrid” systems that combine traditional knowledge and approaches with new knowledge, technologies, tools, and economic understanding.
“Hybrid” technologies help farmers to deal with environmental changes

Average income made by 22 families from 1998 to 2000, Iquitos, Peru
“Hybrid” systems help farmers to deal with market changes and opportunities

Price fluctuation of cassava per hours in the markets of Macapa, Brazil in February, 2002
Average number of agriculture products sold by 15 families in the markets of Macapa, Brazil in five years (1998 - 2002)
Changes in rural development priorities at global, regional and national levels

Coffee economy collapsed in Kenya
Some examples of “hybrid” technologies and systems developed by farmers
A “hybrid” biodiversity-friendly and profitable system for timber and food production in Tanzania
A system that integrates modern forestry with traditional farming practice

- New tree species (including some exotic trees)
- New planting patterns recommended by foresters
- Recreates traditional patterns for cultivating wild vegetables and crops
New locally-developed seed storage technologies using waste oil developed by caboclos in Brazilian Amazonia.
Average time of storing corn, bean and peanut seeds using the "hybrid" system and other methods by 25 families (1998-2002)
These hybrid systems help smallholders deal with changes produced by unstable markets, shifting national policies, and global trends.
These systems can raise rural incomes:
Average annual income (US$) made from managed fallows using a “hybrid” agroforestry system promoted by PLEC in Brazil.
PLEC facilitates the spread of these innovative hybrid technologies and systems that combine modern and traditional production knowledge and inputs through a tested set of “demonstration” activities.
How does PLEC work?

PLEC identifies the “expert farmers,” developers of innovative practices and incorporates them and their communities into rural research, demonstration, and outreach.
- PLEC uses a great variety of demonstration approaches.
- PLEC uses demo sites in the landholdings of expert farmers to facilitate the exchange of knowledge among farmers.
PLEC dissemination methods are tested and effective

Families that adopted the expert farmer “hybrid” agriculture system after participating in demonstration activities in 6 communities, Ghana

![Bar chart showing the number of practicing and non-practicing farmers across years: 1999, 2000, 2001/02. The chart indicates a significant increase in practicing farmers from 1999 to 2001/02.]
PLEC provides a unique network for South-South cooperation and South-North twinning arrangements. Collaboration between 19 institutions and 6 PLEC clusters in 12 highly biodiverse countries.
Results of PLEC

- More appropriate local development
- Enhanced well-being of rural families
- Pro-poor environmental conservation
Results of PLEC:

environmental benefits

• Lowering use of chemicals

• Increasing use of local varieties and the value of agrodiversity

• Using sustainable production methods that maintain ecosystem function
The future of PLEC

PLEC is now focussed on mainstreaming its approaches into national and international policies and training institutions to bring such benefits to a wider sample of projects, countries, and communities.
Conclusions

• "Expert" farmers and their “hybrid systems” offer local solutions to some of the most pressing problems of poverty and environmental degradation

• PLEC offers a sustainable future to agricultural communities worldwide