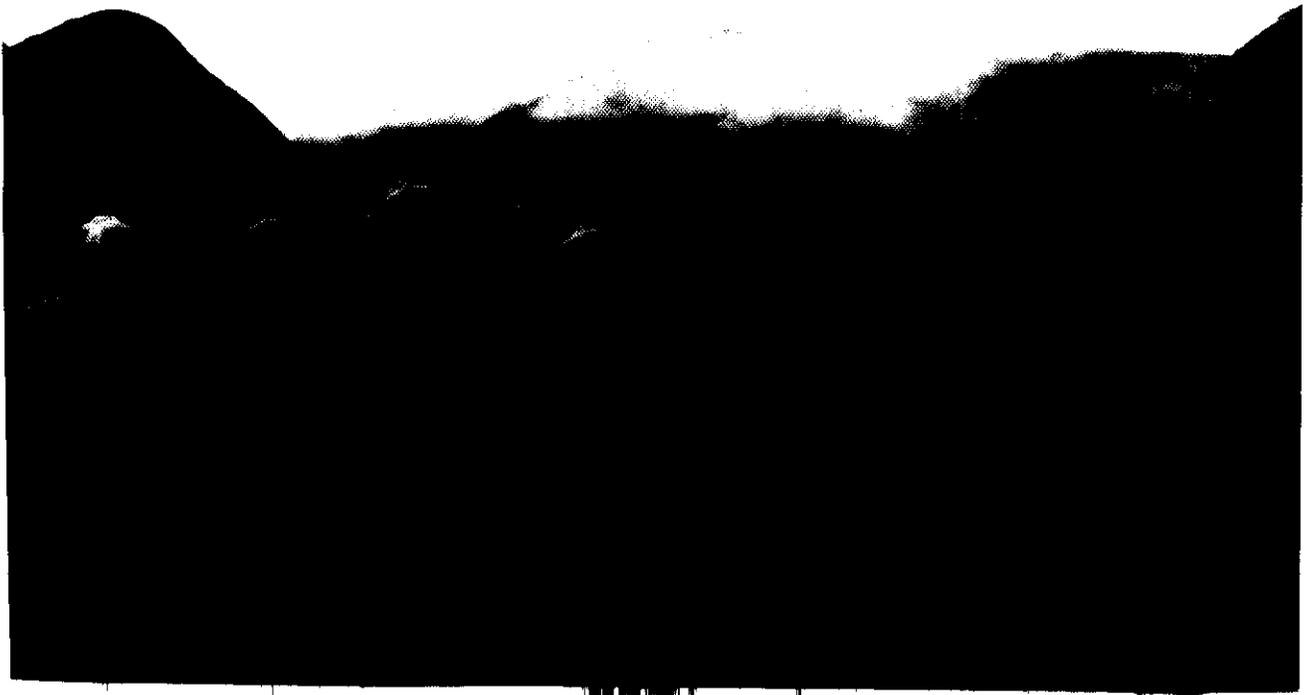


PIN 111, 055
20951

Sustainable Management of Natural Resources in the Andean Ecoregion

INTERNATIONAL POTATO CENTER



The Andean Ecoregion

In the high mountains of the Andes, where some of the world's most renowned cultures have flourished, today's population is faced with poverty and malnutrition due to declining agricultural production and growth in population. Stretching from Venezuela to Argentina, this complex ecoregion is characterized by steeply sloping hillsides and highly variable soil and climate conditions. The Andes are home to more than 35 million people whose main source of sustenance is agriculture. In Andean farming systems, the potato is the dominant staple crop. Native llamas and alpacas also play an important role, especially in the higher altitudes where crop production may be limited to bitter potatoes and a few little known Andean roots and tubers.

The information currently available on the Andean ecoregion must be consolidated and supplemented to create integrated research and development programs and policies. Only in this way can the needs of its inhabitants be addressed in a holistic, sustainable manner.



Stretching from Venezuela to Argentina, this complex ecoregion is characterized by steeply sloping hillsides and highly variable soil and climate conditions.



CIP's Role in the Future of the Andes

The International Potato Center's work in the Andes began 20 years ago, when CIP was founded to conduct research on root and tuber crops for developing countries. Originally focused on potato, this work was expanded in 1985 to include sweetpotato. Recently, CIP joined forces with national programs in the area to help rescue several Andean root and tuber crops (ARTC) from the threat of genetic erosion.

In March 1992, a workshop was held at CIP headquarters in Lima to determine appropriate courses of action to promote development for the Andean agroecosystem. The result was a clearly voiced call on the part of donors and national program colleagues for CIP to take the lead in organizing a consortium for research on sustainable management of Andean natural resources. In doing so, CIP will build on its areas of comparative advantage to contribute to efforts in diverse research topics, from livestock and farming concerns to sociological studies and policy formulation. CIP's own research emphasis will be on the biodiversity of the ARTC and on natural resources management. These endeavors will make full use of the techniques developed by the Center over the years to gain the users' perspective on technology development and application.



Recently, CIP joined forces with national programs in the area to help rescue several Andean root and tuber crops (ARTC) from the threat of genetic erosion.

Protecting Genetic Diversity

Farmers in the Andes domesticated some 25 species of edible roots and tubers. Though many of these food plants are adaptable to a range of environments, only potato, sweetpotato, and cassava have achieved international importance. Yet many of the lesser known roots and tubers have been a mainstay in the sustenance of generations of Andean populations. Like the potato, they may prove to have an important role worldwide.

CIP is currently helping to consolidate efforts in the Andean countries to collect and conserve the most promising Andean root and tuber crops. Favorably located in their center of genetic diversity, CIP will bring to this task its expertise in tissue culture, in vitro preservation, rapid propagation, virus identification and eradication, and other aspects of root and tuber crop germplasm management.

By protecting the genetic diversity of these crops, CIP is laying the ground for their evaluation, improvement, and increased production in the Andean countries. Future action will also include the exploration of possibilities for their use in manufactured goods for export, and their introduction in countries with similar agroecologies. In this way, the ARTC can contribute more fully to generating food, employment, and income in areas of need



...many of the lesser known roots and tubers have been a mainstay in the sustenance of generations of Andean populations. Like the potato, they may prove to have an important role worldwide.

Preserving the Natural Resource Base

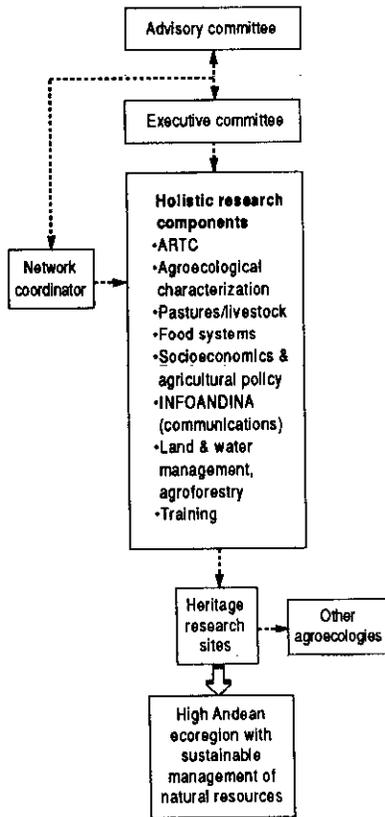
Degradation of land and water resources constitutes the major threat to sustainable agriculture in the Andean ecoregion, where food and fuel are at a premium. To help reverse this process, CIP and its collaborators aim to promote the implementation of land-use practices that will preserve and complement the region's natural resource endowment. Due to the complexity of this research effort, broad collaboration among national and international institutions will be sought, combining many areas of comparative advantage.

At the community level, benchmark sites will be selected to represent major agroecologies. There, scientists will document the long-term impact of land-use systems on the environment. CIP's ample experience with Andean highland production systems will contribute to the collection of indigenous knowledge and the analysis of traditional practices.

Other research for the development of sustainable land-use systems will include analysis and mapping of agroecozones, agricultural and environmental policy studies, pastures and livestock component research, development of cropping and production systems and analysis of their social feasibility, and food systems research.

At the community level, benchmark sites will be selected to represent major agroecologies. There, scientists will document the long-term impact of land-use systems on the environment.





The identification, promotion, implementation, and monitoring of collaborative activities with diverse participants in a broad, research consortium will require special program, training, and information functions.

A Participatory Research Consortium

The identification, promotion, implementation, and monitoring of collaborative activities with diverse participants in a broad, research consortium will require special program, training, and information functions. Aside from conducting research in its areas of comparative advantage, CIP will provide targeted support in project planning as well as in communications and information exchange through INFOANDINA. This information system will facilitate the compilation and analysis of existing data and emerging insights.

The structure of the consortium will be open and informal. CIP will seek the active participation of public-sector, academic, and non-governmental organizations, as well as of other international centers such as CIAT, CIFOR, CIMMYT, ICRAF, IFPRI, ILCA, and IPGRI. Important functions will include characterizing the incidence and mechanisms of genetic and land resources degradation; assessing technological and policy options; generating and adapting environmentally sound technological components that are acceptable to farmers; strengthening the capacity of national systems to generate and transfer appropriate technology; and promoting the horizontal transfer of applicable component technologies to similar agroecosystems.

Contributing to Human Welfare

The farmers and consumers of the Andes will be the immediate beneficiaries of this initiative to promote agricultural sustainability. Frequently spoken of today, sustainability is directly tied to population growth, which puts pressure on agriculture by reducing the availability of cultivable land per person. In the process of meeting the greater demand for food, natural resources are often depleted. Unless this tendency is reversed, it will become increasingly difficult to satisfy the food requirements of future generations. The ways in which we produce food must complement, rather than deteriorate the natural resource base.

Better management of resources will reduce the existing pressure on Andean forests and fragile lands. At the same time, increased agricultural productivity and dietary quality will lead to improvements in the quality of life in the Andes. These achievements, in turn, will help stem the flow of migration to the coastal and Amazon areas while increasing the availability of food in neighboring urban centers.

Collaboration with institutions in similar agroecologies, such as the highlands of Eastern Africa, will extend the benefits of this research to other areas, thus contributing to human welfare worldwide.

Better management of resources will reduce the existing pressure on Andean forests and fragile lands. At the same time, increased agricultural productivity and dietary quality will lead to improvements in the quality of life in the Andes.





INTERNATIONAL POTATO CENTER (CIP)

