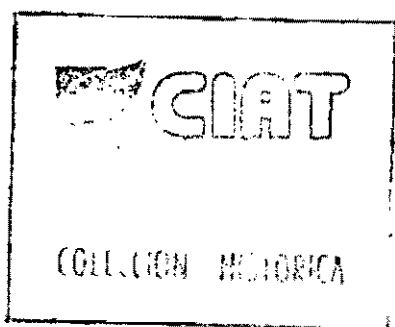


S
592
.6
.C35
R4
d. 3

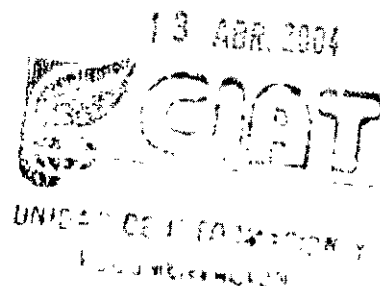
***Research Network for the
Evaluation of Carbon Sequestration Capacity
of Pasture, Agropastoral and Silvopastoral Systems
in the American Tropical Forest Ecosystem***

***CIPAV- Universidad de la Amazonia -CIAT-CATIE-
Wageningen University and Research Centre.***

**The Netherlands Cooperation:
Activity CO-010402**



***Project duration: 5 years
December 1, 2001 – November 30, 2006***



ANNUAL PLAN 2004

Presented to The Netherlands Embassy, Bogotá, February 29, 2004.

CONTENTS

Acknowledgements

Participant Institutions, Project Executive Committee, Project members and Consultants

1. BACKGROUND

1.1 Project Executive Summary.

1.2 Project main goal, objectives, expected products and research methodology.

2. WORK PLAN 2004 (December 1, 2003 – November 30, 2004)

2.1 Activities, responsibilities of each participating institution and verifiable indicators.

2.2 Key events 2004

- Fifth International Coordination Meeting, Punta Arenas, Costa Rica, July 26-29, 2004
- Attendance to international meetings on carbon sequestration research and policy issues.

2.3 Third year expected results.

3. BUDGET 2004

References

ANNEXES

Annex 1: Chronogram of Activities 2004

Annex 2: Budget Tables (9 tables): with years 1-2 executed budget, year 3 requested budget, and years 4-5 projected budget.

Annex 3: Program, Fifth International Coordination Meeting.

Acknowledgements

The present document, ANNUAL PLAN 2004, was prepared by the project Scientific Director, incorporating in it the recommendations from project members and consultants product of the very fruitful discussions and contributions presented during the Fourth International Coordination Meeting of our Project, held at CIAT on September 22-26, 2003. We sincerely thank project member and consultants for their excellent contributions and high human quality.

We express our gratitude to The Netherlands Ministry of Development Cooperation and to The Netherlands Embassy in Bogotá, Colombia, for making real this important project.

With our combined efforts and our sincere will for achieving relevant high quality research results, we hope to contribute to mitigate the adverse effects of global warming in vulnerable ecosystems of the developing world, as the American Tropical Forest Ecosystem.

With best wishes for success in the third year of our project.

María Cristina Amézquita
Project Scientific Director
Ph. D., Production Ecology and Resource Conservation

Cali, Colombia, February 29, 2004.

Participant Institutions

CIPAV: Centre for Research on Sustainable Agricultural Production Systems, Cali, Colombia.
Legal and technical representative: Dr. Enrique Murgueitio, Executive Director.

Universidad de la Amazonia, Florencia, Colombia.
Legal representative: Dr. Oscar Villanueva Rojas, Rector.
Technical representative: Dr. Bertha Leonor Ramírez, researcher.

CIAT: International Centre for Tropical Agriculture, Cali, Colombia.
Legal representative: Dr. Joachim Voss, Director General.
Technical representative: Dr. Edgar Amézquita, Soil Scientist.

CATIE: Centro Agronómico Tropical para Capacitación y Enseñanza, Turrialba, Costa Rica.
Legal representative: Dr. Pedro Ferreira Rossi, Director General.
Technical representative: Dr. Muhammad Ibrahim, researcher.

Wageningen University and Research Centre, Wageningen, The Netherlands.
Representatives: Drs. Bram van Putten and Peter Buurman, researchers.

Project Executive Committee

- **Dr. María Cristina Amézquita.**
Project Scientific Director.
Ph.D., Production Ecology and Resource Conservation.
- **Dr. Enrique Murgueitio.**
Project Administrative and Financial Director. CIPAV's Executive Director.
- **Bertha Leonor Ramírez.** Researcher, Universidad de la Amazonía.
Ph.D., Agroforestry Systems.
- **Dr. Edgar Amézquita.** Researcher, CIAT. Ph.D., Soil Sciences.
- **Dr. Muhammad Ibrahim.** Researcher, CATIE. Ph.D., Agronomy.
- **Dr. Bram van Putten.** Ph.D. in Mathematics.
Wageningen University and Research Centre.
- **Dr. Peter Buurman.** Ph.D. in Soil Chemistry and Dynamics.
Wageningen University and Research Centre.

Consultant: Professor Dr. Leendert 't Mannetje.

Ph. D. in Tropical Grasslands. Wageningen University and Research Centre.

Project members

- ***Field research – Hillsides ecosystem (Colombia)***
María Elena Gómez. Agronomist, M.Sc.- CIPAV
Piedad Cuellar. Participatory research, M.Sc.- CIPAV
- ***Field research – Semi-humid Tropical Forest (Costa Rica)***
Tangaxhuan Llanderal (Ph. D. cand), CATIE.
Alexander Navas, Agronomist, CATIE.
- ***Field research – Humid Tropical Forest (Colombian Amazonia)***
Bertha Leonor Ramírez. Agroforestry Systems. Ph.D.
Jaime Enrique Velásquez. Agronomist. Ph.D.
Jader Muñoz, Ph.D. (cand.)
B.Sc. students
Universidad de la Amazonia.
- ***Environmental Economist:***
José Gobbi, Ph. D., Economics. CATIE.
- ***Mathematical modelling***
M.Sc. students under Dr. Bram van Putten. Wageningen University.
- ***DB analyst/statistician***
Héctor Fabio Ramírez. Statistician.
- ***Soil sampling and biomass measurement***
Hernán Giraldo. Agronomist
- ***Executive Assistant***
Francisco Ruiz. Industrial Engineer.

Research Services

- ***Laboratory analyses***
Samples from Colombian ecosystems: contracted with CIAT's Soils Laboratory.
Samples from Costa Rica ecosystem: contracted with CATIE's Soils Laboratory.
- ***GIS (cartography and 3D images)***
To be contracted with CIAT or with Wageningen University.

Research Network for the Evaluation of Carbon Sequestration Capacity of Pasture, Agropastoral and Silvopastoral Systems in the American Tropical Forest Ecosystem

**CIPAV- Universidad de la Amazonia -CIAT-CATIE-
Wageningen University and Research Center**

1. BACKGROUND

1.1 Project Executive Summary

The present international multi-institutional research project was presented by a developing country (Colombia) for financial support to The Netherlands Ministry of Development Cooperation, through The Netherlands Embassy in Bogotá, Colombia. Its broad research topic is Climate Change: mitigation alternatives for vulnerable ecosystems in developing countries. It combines efforts from the national research community, represented by CIPAV and Universidad de la Amazonia, and the international research community, represented by CIAT, CATIE and Wageningen University and Research Centre, to help prepare ourselves and our future generations to mitigate the effects of global warming. This research project responds to the United Nations Framework Convention on Climate Change (UNFCCC, New York, May 9, 1992, last modified on 11 October 2000) Article 3 (numeral 2), Article 4 (numerals d and g), Article 5 (numerals a and b) and Article 12 (numeral 4); to Kyoto Protocol Article 10 (numeral d); to The Bonn Agreement (COP6 - July, 2001), The Marrakesh Conference (COP7 - Nov, 2001) and The Netherlands Implementation of Clean Development Mechanism (CDM) and related research on mitigation alternatives (October 22, 2001). It consulted the 1996 IPCC Guidelines for National Greenhouse Gas Inventories, and Winrock (2000) methodology for monitoring carbon storage in agroforestry projects.

The project main goal is to contribute to sustainable development, poverty alleviation and mitigation of the undesirable effects of climate change, in particular CO₂ emissions, in vulnerable sub-ecosystems of the American Tropical Forest ecosystem. This main goal will be attained through conduction of scientific research and systematic observations on a range of pasture, agro-pastoral and silvo-pastoral systems, in small, medium-size and large farms, in three sub-ecosystems of the American Tropical Forest ecosystem vulnerable to climate change: the eroded Andean hillsides of Colombia (densely populated), the semi-humid tropical forest of Costa Rica (densely populated), and the humid tropical forest of the Amazonian region in Colombia (zone of social conflict).

Research aims at identifying improved and sustainable pasture, agro-pastoral and silvo-pastoral systems that provide a viable and economically attractive solution to the farmer (alleviating poverty) and offer environmental services, particularly increases in soil organic matter, carbon accumulation and act as carbon sinks.

Field research will be conducted in Colombia and Costa Rica. Emphasis is given to poverty alleviation in the sense that this research aims at demonstrating that enhancing C accumulation and protecting carbon sinks is an economically attractive activity for farmers.

Project duration is 5 years (Dec1, 2001 - Nov30, 2006). Project cost is US\$ 3,698.525, with a contribution from The Netherlands Ministry of Development Cooperation, channelled through The Netherlands Embassy in Bogotá, Colombia, of US\$1,381.765, representing 37 % of project total cost.

1.2 Project Main Goal, Objectives, Expected Products and Research Methodology

Main Goal

To contribute to sustainable development, poverty alleviation and mitigation of the undesirable effects of greenhouse gasses on climate change, in particular CO₂, in vulnerable sub-ecosystems of the American Tropical Forest ecosystem.

Sub-ecosystems considered within the American Tropical Forest ecosystem are:

- (a) Eroded Andean Hillside of the semi-evergreen seasonal forest (H), Colombia.
- (b) Mild-slope areas of the Semi-humid and humid Tropical Forest (SHF), Costa Rica.
- (c) Flat and mild-slope areas of the Humid Tropical Forest (HF), Amazonia, Colombia.

Land use systems to be monitored and evaluated at farm level include: degraded land (negative control), native pasture, improved grass-alone pasture, improved grass with herbaceous legume, improved grass with woody legumes, improved grass with various trees (fruit trees, wood trees), forage banks, "barbechos"/"charrales"/"rastrojos" and natural forest (positive control). Table 1 shows the range of land use systems to be evaluated within each sub-ecosystem.

| Table 1: Land Use Systems to be evaluated per sub-ecosystem | | H | SHF | HF |
|-------------------------------------------------------------|-------------|---|-----|----|
| 1. Degraded land | → - CONTROL | ✓ | ✓ | ✓ |
| 2. Native pasture | | | ✓ | ✓ |
| 3. Improved grass-alone pasture | | ✓ | ✓ | ✓ |
| 4. Improved grass-herbaceous legume pasture | | | ✓ | ✓ |
| 5. Improved grass-woody legumes | | | | ✓ |
| 6. Grass + other trees (fruit trees, wood trees) | | | ✓ | ✓ |
| 7. Forage banks for "cut and carrying" | | ✓ | ✓ | ✓ |
| 8. "Charrales", "barbechos", "rastrojos" | | | ✓ | ✓ |
| 9. Natural Forest | → + CONTROL | ✓ | ✓ | ✓ |

Objectives

- (1) Estimate and compare the level of Soil Carbon Stocks (SCS) of a range of long-established land use systems of similar age within each sub-ecosystem, comparing them with two reference states: degraded land (negative control) and native forest (positive control).
- (2) Estimate and compare, through small-plot replicated experiments, changes in time in the level of SCS of improved pasture systems newly established on degraded areas, comparing them with degraded land (negative control).
- (3) Perform an economic valuation of the capacity for carbon storage of the range of land use systems.
- (4) Perform a socio-economic evaluation of the range of land use systems in terms of farmer's benefit.
- (5) Provide recommendations on land use systems that are economically attractive to the farmer and beneficial to the environment as contributors to increases in carbon sequestration and carbon sinks.
- (6) Develop cost-effective methodologies for C monitoring in these different land management systems.
- (7) Develop mathematical models to extrapolate carbon sequestration capacity in similar areas within the American Tropical Forest Ecosystem for future decision-making in research and policy-making.

Expected Products

- Identified pasture, agropastoral and silvopastoral systems that are viable, economically attractive to the farmer, and enhance C accumulation and SCS.
- Estimated SCS levels, animal productivity and farmer's economic benefit of the various land use systems studied across sub-ecosystems.
- Estimated economic benefit of C accumulation in the various land use systems.
- Recommended policy guidelines developed for paying C incentives to farmers in these land use systems in the tropics.
- Shared new knowledge with farmers, researchers and policy-makers invited to field days and training events.
- Better knowledge of C accumulation levels in these complex pasture, agropastoral and silvo-pastoral systems in the tropics.
- Refined criteria, methodology and scientific information for future research on carbon sequestration in pasture, agro-pastoral and silvo-pastoral systems in the tropics.
- Identified land-use systems and sites for targeting CDM within the American Tropical Forest Ecosystem.

Research Methodology

Research methodology for this 5-year project was discussed and agreed by participant institutions, project members and consultants during its First International Coordination Meeting, held at CIAT, December 17-19, 2001, and refined throughout the first year of project implementation.

Research methodology, common across sub-ecosystems, includes the following research strategies:

A. Evaluate, through a well-defined Soil Sampling Design, a range of long-established pasture, agro-pastoral and silvo-pastoral systems of similar age within each sub-ecosystem (11-20 years of age) to estimate their Soil Carbon Stock (SCS) level in comparison with two extreme reference states: degraded land (negative control) and native forest (positive control).

B. Evaluate, through small-plot replicated experiments, changes in SCS associated with establishing improved pasture systems on degraded land, to quantify and compare after 4 years their level of C accumulation vs. degraded land.

C. Evaluate farmer's socio-economic benefit of improved pasture systems, in comparison with non-improved traditional systems.

D. Extrapolate project findings to similar areas within the American Tropical Forest Ecosystem.

E. Offer policy recommendations regarding pasture, agropastoral and silvopastoral systems that are economically attractive solutions to the farmer, and offer environmental services, in particular carbon accumulation.

2. WORK PLAN 2004

2.1 Activities, Responsibilities of each Participant Institution and Verifiable Indicators.

Activities envisaged for the third year of project implementation (December 1, 2003 – November 30, 2004) are listed below, organised by objectives. Each activity with its corresponding chronogram, responsibilities of participant institutions, and verifiable indicators, are presented in a graphical form on Annex 1.

Activities

OBJECTIVE 1: Project organisation

1. Preparation and agreement of annual contract for project personnel. Dates: Dec 2003 – Jan 2004.
2. Preparation and agreement of contract for Scientific Director. Dates: Jan 2004.
3. Preparation and agreement of TOR's for Consultants. Dates: Jan 2004.
4. Renewal of contracts with farmers. Dates: January and February 2004.

OBJECTIVE 2: Technical and administrative project coordination activities

1. Preparation of ANNUAL PLAN 2004. January-February 2004
2. Preparation and agreement of Work Plan for two Ph.D. students on Carbon Isotopes (the first) and organic matter fractionation (the second). Dates: (March-September 2004)
3. Preparation of third year - first semester technical and financial reports (15 May, by institution and 15 June 2004, integrated).
4. Preparation and conduction of Fifth International Coordination Meeting (Punta Arenas, Costa Rica, July 26-29, 2004)
5. Preparation of Proceedings 2004, based on contributions to Fifth International Coordination Meeting. Dates: August – November 2004.
6. Preparation of third year - second semester technical and financial reports (15 November, by institution and 15 December 2004, integrated)
7. Preparation of ANNUAL PLAN 2005. Dates: December 2004. To be handled to The Netherlands Embassy in Bogotá, Colombia, on December 31, 2004.

OBJECTIVE 3: Training to project members

“Economic Valuation of Environmental Services with practical applications at farm level”. CIAT, August- September 2004 (to be confirmed by the lecturer).

OBJECTIVE 4: Socio-economic Simulation.

1. Socio-economic data selection from the three sub-ecosystems.
2. Implementation of simulation exercise, using economic simulation software. Dates: April-July 2004.

OBJECTIVE 5:

Second Soil C sampling: Three sub- ecosystems: Hillsides (Colombia), Sub-humid and humid Tropical Forest (Costa Rica) and Humid Tropical Forest, Amazonia, Colombia. Dates: February- November 2004.

1. Soil C (total C and oxidisable C), total N.
2. Vegetation characterisation: type of vegetation, density, and biomass estimation.

OBJECTIVE 6:

Evaluation of small-plot experiments (with improved pastures (grass, grass-legume and forage banks) compared with degraded land to monitor the changes in C accumulation of recently improved fields. Three sub-ecosystems. Dates: January – November 2004.

2.2 Key Events 2004

Fifth International Coordination Meeting

The Fifth International Coordination Meeting will be held, in principle, at Punta Arenas, Costa Rica, under the organisation of CATIE with collaboration and support from the project direction. Participants will include all partner institutions representatives, project members and consultants. Topics discussed included: (a) Present state of project advance, both in bio-physical and socio-economic research; (b) role of Carbon Isotope research, through Ph. D. students under Dr. Peter Buurman, Wageningen University, The Netherlands; (c) Mathematical Simulation work plan in the project; (d) visit to the project field experiments in Costa Rica research sites; and finally (e) key issues for discussion. Working group will prepare general recommendations for project advance. Program is attached as Annex 3.

Attendance to international conferences on C sequestration research and other relevant meetings.

Project members and consultants need to make the project aware of these events to keep updated on current state of research and policy issues on the subject matter.

2.3 Third Year Expected Results

At the end of the third year of project implementation the following results will be expected:

1. Detailed characterisation of all research sites and two C-samplings cycles of project sites in the three sub-ecosystems under study: Andean Hillside, Colombia, Sub-humid and humid Tropical Forest, Costa Rica, and Humid Tropical Forest, Amazonia, Colombia.
2. Data on 3-year Carbon sampling in all project sub-ecosystems statistically analysed.
3. Data on socio-economic research from the first two research phases, on all sub-ecosystems, available. Phase 1: farm characterisation; phase 2: economic simulation.
4. Project personnel trained in "Economic Valuation of Environmental Services, with practical applications at farm level".
5. Preliminary research data from small-plot experiments available.

3. BUDGET TABLES

Budget tables with executed budget for years 1-2, requested budget for year 3 adjusted according to Work Plan 2004, and projected budget for years 4-5, global and per institution/year, discriminated by donor funds and matching funds, are presented as Annex 2 (Tables 1 to 9).

REFERENCES

- Bonn Agreement, 2001. United Nations Six Conference of the Parties (COP6). Bonn, Germany, July, 2001.
- Fisher, M.J., Rao, I.M., Ayarza, M.A., Lascano, C.E., Sanz, J.I., Thomas, R.J. and Vera, R.R., 1994. Carbon storage by introduced deep-rooted grasses in the South American savannas. *Nature*, Vol 371, 15 September, 1994.
- Ibrahim, M.; Franco, M.; Pezo, D.A.; Camero, A.; Araya, J.L., 2001. Promoting intake of *Cratylia argentea* as a dry season supplement for cattle grazing *Hyparrhenia rufa* in the subhumid tropics. *Agroforestry Systems*. 51 (2) 167-175.
- Instituto Nitlapán, Central American University, Managua, Nicaragua and CATIE, Turrialba, Costa Rica, April, 2000. Programa de Reconversión técnica ganadera y fijación de carbono. Project proposal submitted to Finnish Cooperation.
- IPCC, 1996. Intergovernmental Panel on Climate Change Guidelines for National Greenhouse Inventories. Reference Manual, Volume 3. Revised 1981 corresponding document.
- IPCC, 1999. Climate Change and its Linkages with Development, Equity, and Sustainability. Proceedings of the IPCC Expert Meeting held in Colombo, Sri Lanka, 27-29 April 1999.
- Mannetje, 't L., 2000. Methods for estimating botanical composition, species diversity and dry matter yields. Department of Plant Science, Wageningen University, Wageningen, The Netherlands.
- Marrakesh Conference, 2001. United Nations Seventh Conference of the Parties (COP7), Marrakesh, November 2001.
- Pretty, J. and Ball, A., 2001. Agricultural Influences on Carbon Emissions and Sequestration: A review of Evidence and the Emerging Trading Options. Centre for Environment and Society. Occasional Paper 2001-03, University of Essex.
- RIEPT, 1979-1994. International Network for Tropical Pasture Evaluation. Publications and Annual Meetings Proceedings. CIAT.
- Szott, L. Ibrahim, M. and Beer, J., 2000. The hamburger connection hangover: cattle pasture land degradation and alternative land use in Central America. CATIE - DANIDA- GTZ.
- The Netherlands Implementation of Clean Development Mechanism (CDM), 2001. The Hague, October 22, 2001.

UNFCCC, 1992. United Nations Framework Convention on Climate Change (UNFCCC, New York, May 9, 1992; last modified on 11 October 2000).

Kyoto Protocol, 1997. Kyoto Protocol of the United Nations. Kyoto, Japan, 1997.

Veldkamp, E. 1993. Soil organic carbon dynamics in pastures established after deforestation in the humid tropics of Costa Rica. Ph.D. thesis. Wageningen Agricultural University. The Netherlands. 112p.

Winrock, 2000. A guide to monitoring carbon storage in forestry and agro-forestry Projects.

ANNEXES

Annex 1: Chronogram of Activities 2004

Annex 2: Budget tables (tables 1 to 9)

Annex 3: Program – Fifth International Coordination Meeting, Punta Arenas, Costa Rica, July 26-29, 2004.

Annex 1: Chronogram of Activities 2004

CHRONOGRAM OF ACTIVITIES - ANNUAL PLAN 2004

December 1, 2003 - December 31, 2004

| OBJECTIVE | ACTIVITY | INDICATORS | | | | | | | | | | | | | Participant Institutions | | | | |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----|---|---|---|---|---|---|---|---|---|----|----|--------------------------|--|--|--------------------------------------------------------------|-------------------|
| | | | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | |
| 1. PROJECT ORGANISATION ACTIVITIES. | Preparation and agreement of annual contract for project personnel | Signed contract | | | | | | | | | | | | | | | | CIPAV | |
| | Preparation and agreement of Terms of Reference for Consultants | Accepted TOR's | | | | | | | | | | | | | | | | Project Direction CIAT WU | |
| | Renewal of contract with farmers for the three sub-ecosystems: Andean Hillside, Amazonia and Costa Rica farms. | Contracts accepted. Farms ready to work | | | | | | | | | | | | | | | | U.A.-CIPAV | CATIE |
| 2. TECHNICAL AND ADMINISTRATIVE COORDINATION | Preparation of ANNUAL PLAN 2004 | Plan handed to The Netherland Embassy in Bogotá, Colombia (February 29, 2004) | | | | | | | | | | | | | | | | Project Direction | |
| | Preparation and agreement of work plan for two Ph.D. students on C isotopes (under Dr Peter Buurman). | Work plan ready. | | | | | | | | | | | | | | | | W.U | Project Direction |
| | Preparation of Fifth Six-months Technical and Financial Reports. | Reports handed to The Netherlands Embassy in Bogotá, Colombia June 30, 2004. | | | | | | | | | | | | | | | | All Participant Institutions | |
| | Fifth International Coordination Meeting | Meeting conducted | | | | | | | | | | | | | | | | Project Direction CATIE CIAT CIAPV U.AMAZ W.U | |
| | Preparation of Proceedings 2004 | Internal publication ready | | | | | | | | | | | | | | | | W.U. CIPAV CATIE CIAT U. Amazonia | Project Direction |
| | | | | | | | | | | | | | | | | | | | |

CHRONOGRAM OF ACTIVITIES - ANNUAL PLAN 2004

December 1, 2003 - December 31, 2004

CONT. PAG -2

| OBJECTIVE | ACTIVITY | INDICATORS | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Participant Institutions |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----|---|---|---|---|---|---|---|---|---|----|----|----|---------------------------------------------------------------|
| 2. TECHNICAL AND ADMINISTRATIVE COORDINATION (cont.) | Preparation of Sixth Six-months Technical and Financial Reports | Reports handed to The Netherlands Embassy in Bogotá, Colombia, before Dec 31, 2004 | | | | | | | | | | | | | | Project Direction CIAT CIPAV CATIE U AMAZ. W.U |
| | Preparation of ANNUAL PLAN 2005 | Plan handed to The Netherlands Embassy in Bogotá, Colombia (December 31, 2004). | | | | | | | | | | | | | | Project Direction and Participant Inet |
| 3. TRAINING TO PROJECT MEMBERS | "Economic Valuation of Environmental Services, with Practical Applications at Farm Level" - CIAT, August - September, 2004 | Training completed | | | | | | | | | | | | | | Invited Lecturer |
| 4. SOCIO-ECONOMIC SIMULATION TOOL | Data selection and implementation using economic simulation Software. Three Sub-ecosystems | Tool ready Simulation scenance analyzed | | | | | | | | | | | | | | Project Direction and CATIE Economics consultant |

CHRONOGRAM OF ACTIVITIES - ANNUAL PLAN 2004

December 1, 2003 - December 31, 2004

CONT. PAG -3

| OBJECTIVE | ACTIVITY | INDICATORS | | | | | | | | | | | | | Participant Institutions | | | |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------|----|---|---|---|---|---|---|---|---|---|----|----|--------------------------|--|-------------------|-------------------|
| | | | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | 12 | |
| 5. SECOND CARBON SAMPLING. AMAZONIA - COLOMBIA, HILLSIDES - COLOMBIA AND COSTA RICA SUB-ECOSYSTEMS | 1. Soil carbon and vegetation evaluations - six new treatments, Amazonia - Colombia | Data organised according to agreed formats | | | | | | | | | | | | | | | Project Direction | |
| | | | | | | | | | | | | | | | | | U. Amazonia | |
| | 2. Soil carbon and vegetation evaluations - second spacial replication, Hillside - Colombia | Data organised according to agreed formats | | | | | | | | | | | | | | | | Project Direction |
| | | | | | | | | | | | | | | | | | CIPAV | |
| | 3. Soil carbon and vegetation evaluations - second spacial replication, Costa Rica | Data organised according to agreed formats | | | | | | | | | | | | | | | CATIE | |
| 6. EVALUATION OF SMALL-PLOT EXPERIMENTS - BIOMASS PRODUCTION | Andean Hillside-Colombia | Two experiments evaluated every 2 months. | | | | | | | | | | | | | | | CIPAV | CIPAV |
| | Humid Tropical Forest - Colombian Amazonia | Two experiments evaluated every two months | | | | | | | | | | | | | | | Univ. Amazonia | |
| | Semi humid and humid Tropical Forest - C. Rica | One experiment evaluated every two months. | | | | | | | | | | | | | | | CATIE | |

CONVENTIONS:

- EXECUTED BY PROJECT DIRECTORS
- HUMID TROPICAL FOREST, COLOMBIA - U. AMAZONIA
- ANDEAN HILLSIDES, COLOMBIA - CIPAV
- SEMI-HUMID TROPICAL FOREST, COSTA RICA -CATIE
- WAGENINGEN UNIVERSITY PARTICIPATION
- CIAT PARTICIPATION

Annex 2: Budget tables (tables 1 to 9)

Annex 3:
**Program Fifth International
Coordination Meeting, Punta Arenas,
Costa Rica, July 26-29, 2004**

The Netherlands Cooperation Activity CO-010402

Research Network for the Evaluation of Carbon Sequestration Capacity of Pasture, Agropastoral and Silvopastoral Systems in the American Tropical Forest Ecosystem

CIPAV- U. Amazonia -CIAT-CATIE-W. University

Project duration: 5 years
December 1, 2001 – November 30, 2006

FIFTH INTERNATIONAL COORDINATION MEETING

Punta Arenas, Costa Rica, July 26-29, 2004

CIPAV: Centre for Research on Sustainable Agricultural Production Systems, Cali, Colombia.
Universidad de la Amazonia, Florencia, Colombia.
CIAT: International Centre for Tropical Agriculture, Cali, Colombia.
CATIE: Centro Agronómico Tropical para Capacitación y Enseñanza, Turrialba, Costa Rica.
Wageningen University and Research Centre, Wageningen, The Netherlands.

PROGRAM

Saturday 24 and Sunday 25 July:

Arrival of guests to San Jose Airport and transport to hotel

Monday, July 26

Moderators: Morning (Enrique Murgueitio); Afternoon (Peter Buurman)

| | | |
|---------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 8:30–8:45 am | Welcome to project members and participants. | Muhammad Ibrahim CATIE |
| 8:45–9:30am | Annual Plan 2004 and summary progress first semester 2004. Key issues for discussion during this meeting. | Maria C. Amezquita, Project's Scientific Director |
| 9:30–10:15am | Advances in Socio-economic research (Oct 2003 – July 2004). Summary results by sub-ecosystem. Questions. | Jose Gobbi Project's Environmental Economist, CATIE |
| 10:15-10:30am | Coffe break | |
| 10:30-11:00am | Socio-economic results - Amazonia | Bertha L. Ramirez, U. Amazonia |
| 11:00-11:30am | Socio-economic results – Costa Rica | Jose Gobbi |
| 11:30-12:00m | Socio-economic results – Hillsides | Piedad Cuellar, CIPAV |
| 12:00-12:30pm | Discussion | Moderator: E. Murgueitio, CIPAV |
| 12:30–2:30pm | Lunch | |
| 2:30-5:30pm | New C data– Costa Rica sub-ecosystem. Discussion (after a coffee break). | Muhammad Ibrahim, CATIE. |

Tuesday, July 27

Moderators: Morning (Edgar Amézquita); afternoon (Tangaxuhan Llanderal)

| | | |
|---------------|------------------------------------------------------------------------|---------------------------------------------------------|
| 9:00- 12:00am | New C data– Amazonia sub-ecosystem. Discussion (after a coffee break). | María Cristina Amézquita and Bertha Ramírez |
| 12:30-2:30pm | Lunch | |
| 2:30-5:30 pm | New C data– Hillsides sub-ecosystem. Discussion (after a coffee break) | María Cristina Amézquita, Hernán Giraldo and M.E. Gómez |

- Moderators are asked to prepare a written summary report, in electronic media, to be presented on Wednesday at the Closing Session, and handled to Francisco Ruiz.

Wednesday, July 28

Field day

Thursday, July 29

Moderator: Morning (Professor 't Mannetje)

| | | |
|---------------|--------------------------------------------------------------------------------------|-----------------------------------|
| 9:00- 9:45am | C Isotope research in the project: Objectives, methodology and expected results. | Peter Buurman and Edgar Amézquita |
| 9:45-10:30am | Discussion. | |
| 10:30-10:45am | Coffee Break | |
| 10:45-11:30am | Mathematical modelling in the project. Objectives, methodology and expected results. | Bram van Putten |
| 11:30-12:15pm | Discussion. | |
| 12:30-2:30pm | Lunch | |
| 2:30-5:30pm | Closing session. Reports from session moderators and general recommendations | All |

- Moderators are asked to prepare a written summary report, in electronic media, to be handled to Francisco Ruiz.

Friday, July 30

Transport of participants to San José Airport
