REGIONAL FUND FOR AGRICULTURAL TECHNOLOGY
MINISTRY FOR PRIMARY INDUSTRIES (MPI) OF NEW ZEALAND
CONTRIBUTION TO THE PROGRAM FTG/ RG-X1202
"LIVESTOCK AND CLIMATE CHANGE: APPLIED RESEARCH AND KNOWLEDGE"

ANNUAL REPORT 2014

Inter-American Development Bank
Office of Outreach and Partnerships
Grants and Co-Financing Management Unit

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FOREWORD

Trust funds allow the IDB to focus on the specific needs of recipient countries in Latin America and the Caribbean (LAC), enhancing the effectiveness of the Bank's programs for sustainable and equitable development. The activities financed – which range from knowledge products, policy design, direct value-added inputs for the preparation, execution, and monitoring of complex loans, to new lines of work in innovative and strategic priority areas for the Region's social and economic development – allow us to move closer to our collective goal of improving lives in the Region.

The IDB trust fund program continued to thrive in 2014. As a result of strong support from our donors, 510 grant operations (Technical Cooperation, Investment Grants, and support to the Externally Funded Workforce) amounting to US$502 million were approved, a 23 percent increase compared to 2013. Just over half of all grant financing – US$272 million – supported the 489 technical cooperation operations (TC) approved in 2014, and 76 percent of these TC operations addressed specific client requests or supported the preparation, execution or evaluation of lending operations. 2014 also witnessed an upsurge in support to investment grants thanks to an expansion of our donor base in this category, resulting in approvals of US$224 million, an increase of 136 percent compared to 2013.

Beginning in 2013, several donors were increasingly opting to support Bank operations through reimbursable financing and co-financing of loans. These contributions allow the Bank to blend mechanisms in order to more effectively support investments in priority sectors in the borrowing member countries. In 2014, reimbursable financing reached record levels, with donor resources supporting a total of 27 loans amounting to US$677.5 million, representing an increase of 151 percent when compared to 2013.

The Board of Executive Directors reaffirmed the IDB's long-standing commitment to the provision of resources for priority TC operations by approving an allocation of US$100 million for 2015 to the Special Programs Financed by Ordinary Capital. These Special Programs complement the parallel Multidonor Trust Funds and represent a key vehicle for the financing of TC operations. As part of our ongoing efforts to improve development effectiveness, IDB Management will use the first semester of 2015 to draft an action plan delineating a series of measures to ensure that the use of resources allocated to TCs is effective, efficient, and strategic.

In 2014, a new policy for the selection and contracting of consulting firms for Bank-executed operations was established. We

also proposed modifications to the procedures for approving TC operations and Investment Grants in order to streamline the consideration and approval process for non-reimbursable operations. In addition, we developed a series of country and sector demand studies to support our ongoing efforts to more effectively program grant financing resources.

We integrated seven additional funds into our donor visualization platform and improved the content for the ten funds previously in the platform. We developed and launched apps and engaging videos to showcase how we jointly respond to development needs in the Region and we packed our Partnerships for Development blog full of posts on new opportunities for partnerships, stories from the field, and changing trends.

Understanding how we can collectively improve development outcomes in the Region was the focus of much of the rich dialogue that took place during the 2014 Donors Meeting, which brought 40 representatives from the donor community to IDB Headquarters to discuss topics spanning from water and sanitation, to citizen security and food security. We were particularly encouraged by our partners' interest in promoting knowledge and innovation in the Region. We will work to ensure that this interest is channeled to our continuing efforts to apply knowledge to development challenges, pilot innovative solutions, and foster a culture of innovation across the Region.

The global and regional economic forecast will continue to present challenges. These are addressed most effectively when we work together, and your continued commitment to the Bank will be echoed by our commitment to become even more results oriented. In 2015, we plan to complete the development of our Monitoring and Reporting System for TC operations, which will allow us to continue improving upon how we capture, systematize, and disseminate the knowledge generated with grant resources. In addition, we will uphold our commitment to the highest standards of transparency, accountability, and integrity by strengthening our anti-corruption and anti-money laundering policy, which will complement existing back-end safeguards with key front-end mitigation measures.

On behalf of my team at the Office of Outreach and Partnerships, allow me to express my sincere appreciation for your continued partnership, commitment, and support. I hope this 2014 Annual Report provides useful information on the impact your valuable contribution is making in the Region.

Bernardo Guillamon
Manager
Office of Outreach and Partnerships
Inter-American Development Bank

CONTENT

ABBREVIATIONS

CATIE	Centro Agronómico Tropical de Investigación y Enseñanza
CIAT	International Center for Tropical Agriculture
CORPOICA	Corporación Colombiana de Investigación Agropecuaria
DICTA	Dirección de Ciencia y Tecnología Agropecuaria de Honduras
FAGANIC	Federación de Asociaciones Ganaderas de Nicaragua
FONTAGRO/FTG	Regional Fund for Agricultural Technology
GHG	Greenhouse Gas
GRA	Global Research Alliance
IDIAP	Instituto de Investigación Agropecuaria de Panamá
IICA	Inter-American Institute for Cooperation on Agriculture
INIAF	Instituto Nacional de Innovación Agropecuaria y Forestal de Bolivia
INIAP	Instituto Nacional de Investigaciones Agropecuarias de Ecuador
INIFAP	Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias de México
INTA	Instituto Nicaragüense de Tecnología Agropecuaria
INTA-MAG	Instituto Nacional de Innovación y Transferencia en Tecnología Agropecuaria de Costa Rica
IPTA	Instituto Paraguayo de Tecnología Agraria
LAC	Latin America and the Caribbean
LEARN	Livestock Emissions and Abatement Research Network
MPI	Ministry for Primary Industries
NZ	New Zealand
ORP	Office of Outreach and Partnerships
PITTA	Plataforma de Investigación y Técnica Agropecuaria de Costa Rica
PRCC	Climate Change Regional Program
TAS	Technical Administrative Secretariat
TC	Technical Cooperation Operation
UNALM	Universidad Nacional Agraria La Molina

EXECUTIVE SUMMARY

With the support from New Zealand, the Regional Fund for Agricultural Technology (FONTAGRO) is currently financing three technical cooperation projects (TC), which were approved in 2013 by its Board of Directors. Their goal is to contribute to building capacity on the measurement of Greenhouse Gas Emissions (GHG) from livestock systems under traditional and improved management. In this context, the projects facilitate the design of mitigation strategies and the formulation of policies that can promote sustainable animal production systems in Central America and the Andean Region.

The project in Central America is led by the Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) and includes institutions from Panama, Costa Rica, Nicaragua, and Honduras.

The project in the Andean Region is led by the Inter-American Institute for Cooperation on Agriculture (IICA), Peru, and includes institutions from Peru, Ecuador, Colombia and Bolivia.

One TC is financing networking and capacity building activities. It is executed by the Technical Administrative Secretariat of FONTAGRO. The objective is to create a network on livestock and climate change so the Latin America and the Caribbean (LAC) institutions can exchange information, standardize methodologies, provide mutual technical support, build capacities and promote collaboration.

As a result of this agreement, most of the Central American and Andean Region countries joined the Global Research Alliance (GRA) membership. This membership allows their participants to get involved in research, development and extension activities related to new technologies and agronomic practices that improve the knowledge in more climate-resilient food systems without increasing greenhouse gas emissions.

I. INTRODUCTION

The purpose of this report is to inform the Ministry for Primary Industries (formerly the Ministry of Agriculture and Forestry) of New Zealand about the progress of projects financed under the technical cooperation RG-X1202 during 2014.

This report presents the status and results from the Technical Cooperation projects (TC) financed and implemented in 2014 under the Agreement between the Ministry for Primary Industries and the IDB. In addition, Article 11 of the Administration Agreement signed on June 9, 2014 requests the presentation of an audited Financial Report of FONTAGRO by the Bank by April 30 of each year.[1]

The Regional Fund for Agricultural Technology (FONTAGRO) is an alliance of countries aimed at promoting and financing research and innovation in the agricultural sector in Latin America and the Caribbean (LAC). Since its launch in 1997, FONTAGRO has become a recognized mechanism characterized by its transparency, sustainability and governance.

The Medium-Term Plan 2010-2015 of FONTAGRO sets out three priorities: (i) promote opportunities to link farmers to markets; (ii) foster opportunities in climate change adaptation; and (iii) expand opportunities for productive and sustainable use of natural resources.

The document is organized as follows: Section II reviews the advances in the implementation of the envisioned projects' activities and demonstrates the results achieved during the year; and Section III draws preliminary conclusions for the Administration Agreement.

II. PURPOSE OF THE CONTRIBUTION AND FINANCIAL SUMMARY

A. Purpose of the Contribution

The Contribution Agreement aims at (i) strengthening the institutional capacity to measure Greenhouse Gas (GHG) emissions from livestock under traditional and improved systems in Central America and the Andean Region, and (ii) facilitate the design of mitigation strategies and the formulation of policies to promote sustainable livestock systems in the previously mentioned sub-regions.

Livestock and dairy production are important activities for the livelihood of small farmers in LAC. Demand for meat, milk and dairy products has been increasing in the last decades as a consequence of urbanization, rising incomes and population growth. These activities are particularly important in Central America and the Andean regions and are critical for food security. However, they are also major utilizers of natural grasslands and pastures, and thus important contributors to GHG emissions, and to climate change. It has been found that GHG emissions (especially methane) from livestock can be reduced with better feeding and management practices, which could also result in higher productivity and better income for smallholders.

The projects are aligned with FONTAGRO's Medium-Term Plan 2010-2015, which seeks to improve family agriculture and foster the ability to adapt to and mitigate climate change through research and development in FONTAGRO's member countries. The latter is to be furthered through FONTAGRO's research entities joining the Global Research Alliance on Agricultural Greenhouse Gases (GRA).

1 - As per Agreement, the Bank will not provide audited financial statements for the New Zealand contribution resources.

B. Financial Information

To date, the Bank has received US$471,076, from the Ministry for Primary Industries (MPI) of New Zealand (NZ), which represents the value of NZ$600,000[2] established in the Agreement. With this contribution, the following projects are being financed:

i. Silvopastoral Systems in Central America; CATIE, Costa Rica (FTG/RF-14652-RG) for US$300,000 (NZ: US$250,000, FTG: US$50,000);

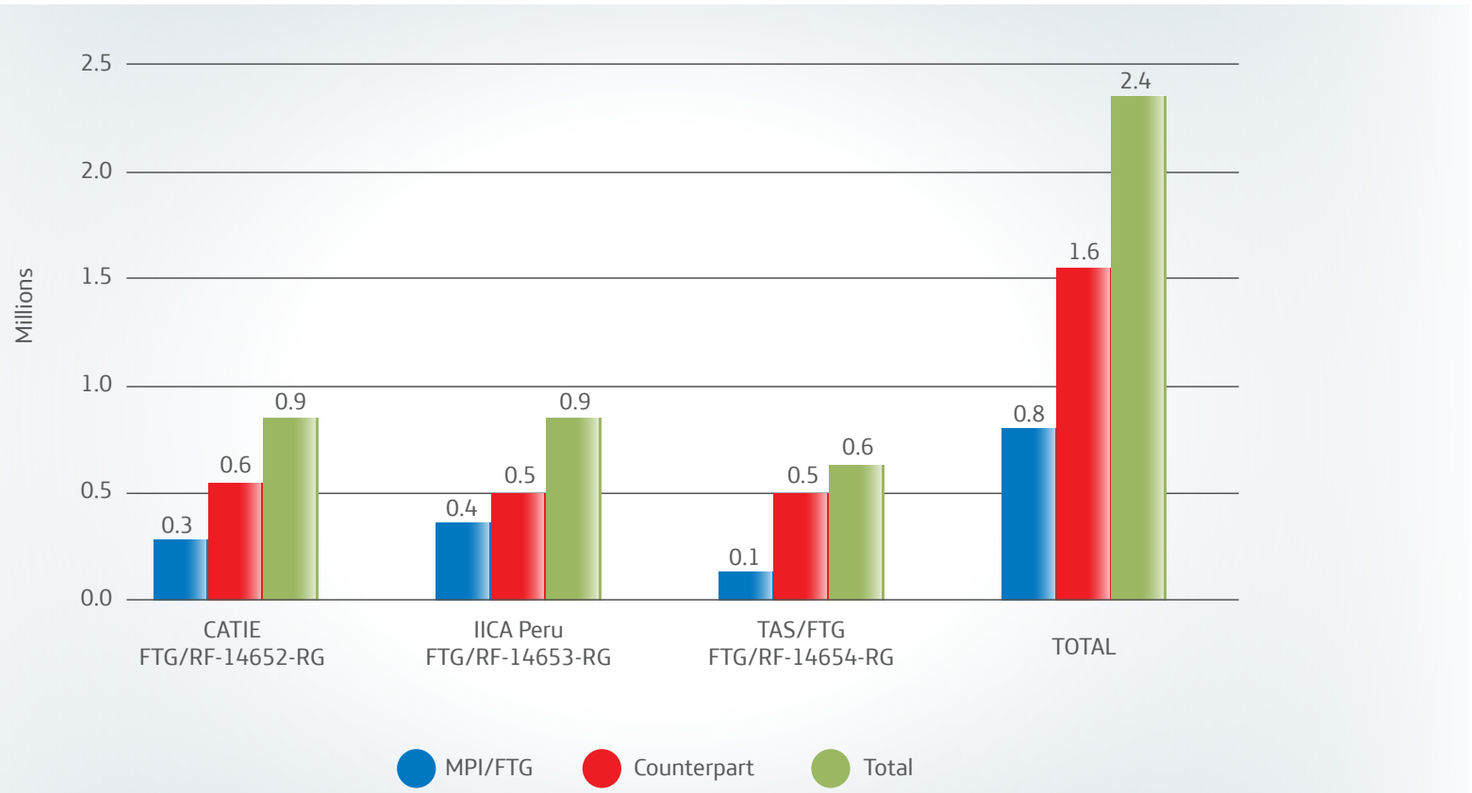
ii. Dairy Systems in the Andean Region; IICA-Peru (FTG/RF-14653-RG) for US$368,000 (NZ: US$168,000, FTG: US$200,000)

iii. Networking and Capacity Building; FONTAGRO (FTG/RF-14654-RG) for US$139,318 (NZ: US$53,076, FTG: US$86,242).

As shown in Figure 1, the funding from FTG and the MPI together with the counterparts add up to US$2.4 million. The funding from FTG/MPI is in cash, while in all cases, the counterpart resources are in-kind.

> FIGURE 1

Budget (in USD millions)



2 - Due to exchange rate fluctuations, the NZ$600,000 contribution from New Zealand translated into US$471,071 instead of US$507,318 as estimated in the indicative budget in Annex 1 to the Agreement. The difference of US$36,242 was absorbed by FONTAGRO under the Networking and Capacity building project. FONTAGRO's increase to this project was also authorized by its Board of Directors during the Extraordinary Meeting in Panama, last February of 2015.

III. ADVANCES IN PROJECTS IMPLEMENTATION/ RESULTS ACHIEVED TO DATE

A. STATUS OF PROJECT PORTFOLIO EXECUTION AND RESULTS

1. CATIE, COSTA RICA (FTG/RF-14652-RG): SILVO-PASTORAL SYSTEMS IN CENTRAL AMERICA

Objective. The main objective of this project is to develop methodologies for the estimation of GHG emissions and economic impact of different production systems in Central America.

The advances in terms of activities conducted by component are as follows:

Project Activities	Accomplishments to Date
General project implementation requirements	Compliance with conditions prior first disbursement: (i) The Executing Agency, CATIE, has signed agreements with other partners in the platform, and (ii) Annual Implementation Plan prepared, detailing the activities to be conducted by component and each partner. Farms in Costa Rica, have been selected as pilot sites and set-up for the measurements. The project has developed strategic alliances with the *Universidad Autónoma de Honduras* and *Universidad de Panamá*, in order to strengthen field activities in each country. Acquisition process for the purchase of materials and equipment for the analysis of methane gases and nitrous oxide completed.
Systematization of methodologies to quantify GHG emissions in livestock farms.	Variables to be monitored during the project have been defined, in order to analyze cattle efficiency production and the GHG estimation at farm level.
Quantification of GHG emissions under various levels of livestock systems intensification.	The first analysis for estimating GHG at the farms has been started.

Project Activities	Accomplishments to Date
Evaluation of economic performance of livestock production systems and their relation with GHG emissions.	The project started to analyze the data contained in a database made by the "*Dirección de Ciencia y Tecnología Agropecuaria*" (DICTA) in Honduras during 2014. The database contains information about farmers and their livestock production, which helps to select the pilot sites for the experiment and other specific data. In April, the draft was presented to the Climate Change Regional Program (PRCC) in Nicaragua.
Strengthening technical capacities, and communication strategies to influence policy formulation for the promotion of low-emission and high-productivity livestock systems.	In March of 2015, this project was presented at the *Plataforma de Investigación y Tecnica Agropecuaria* (PITTA) in Costa Rica; and in November of 2014 at the FAGANIC-DICTA event in Honduras.
Preparation of a Phase II to increase the knowledge on livestock, silvopastoral systems and climate change.	This activity has not yet been initiated.

2. IICA-PERU (FTG/RF-14653-RG): DAIRY SYSTEMS IN THE ANDEAN REGION

Objectives. The general objective of this operation is to build institutional capacity on measurement of GHG emissions and improve dairy systems in the Andean Region.

The advances in terms of activities conducted by component are as follows:

Project Activities	Accomplishments to Date
General project implementation requirements.	Compliance with conditions prior to first disbursement: (i) The Executing Agency, IICA, has signed all but one agreement with the other partners in the platform; CORPOICA (Colombia) is still pending signature. (ii) The project has prepared an Annual Implementation Plan, detailing the activities to be conducted by component and each partner. (iii) The purchase of materials and other equipment required for the measurements is in its initial stages.
Bio-physical and socio-economic characterization of livestock production systems in pilot sites.	Secondary information is being analyzed to characterize project pilot sites. This data includes soils maps, climate data, pastures, human and livestock population, production systems, inputs, outputs, prices, etc.
Measurement of enteric methane and nitrous oxide on traditional and improved dairy production systems in pilot project sites.	This activity has not been initiated yet, in accordance with the schedules of activities.
Evaluation of feeding strategies and their effects on enteric methane and nitrous oxide emissions.	This activity has not been initiated yet, in accordance with the schedules of activities.
Development of scenarios to mitigate enteric methane and nitrous oxide emissions under various dairy production systems.	The project uses special software called “LIFE-SIM” (Livestock Feeding Strategies Simulation Models, Leon-Velarde et al, 2006) for modeling scenarios to reduce GHG emissions and increase livestock productivity. Activities related to the characterization of the traditional farming production practices of the project pilot sites have been initiated.
Strengthening research capacity on measurement of GHG emissions and contribution to policy formulation for the promotion of sustainable dairy systems.	In March of 2015, this project was presented at the *Plataforma de Investigación y Tecnica Agropecuaria* (PITTA) in Costa Rica; and in November of 2014 at the FAGANIC-DICTA event in Honduras.

3. FONTAGRO (FTG/RF-14654-RG): NETWORKING AND CAPACITY BUILDING

Objective: Create a network on livestock and climate change to exchange information, standardize methodologies, provide mutual technical support and promote collaboration.

The advances in terms of activities conducted by component are as follows:

Project Activities	Accomplishments to Date
General project implementation requirements.	The project has been approved.
Coordination Committee and network meetings.	This activity has not been initiated yet, in accordance with the schedules of activities.
Web-page	This activity has not been initiated yet, in accordance with the schedules of activities.
Capacity Building	The *Instituto de Investigaciones Agropecuarias de Chile* with the support from the MPI and TAS/FTG, organized a training activity in Osorno, Chile on January 8-23, 2015. The activity was co-financed by the MPI and FTG. The event included: (i) a two-day workshop on livestock systems research, and (ii) a two-week training session on methodologies for GHG measurements. Also, participants had theoretical and hands-on experience in techniques for measuring enteric methane and nitrous oxide from agricultural systems as well as an opportunity to familiarize themselves with livestock systems research methods. Instructors included INIA-Chile staff that had participated in the first project supported by the cooperation between New Zealand and FTG in 2011, as well as CATIE staff, and a consultant. A total of 20 participants from 10 LAC countries participated. A report of this activity is included as Annex II.

IV. CONCLUDING REMARKS

Following the signature of the Agreement between the Ministry of Primary Industries from New Zealand and FTG/IDB, three TCs have been approved and initiated implementation. The project activities are building upon experiences from previous activities that have been conducted jointly by New Zealand and FTG. Lessons and results from these activities are being incorporated into the new projects.

The training conducted in Osorno, Chile, in January of 2015 has solidified the coordination among the technical leaders from the involved institutions, and through their hands-on participation in the application of the methodology for the estimation and measurement of GHG emissions expanded their research capacities. This activity has also provided the basis for the formation of the network on livestock and climate change and stimulated their membership in the Global Research Alliance on agricultural greenhouse gases.

The Bank and FONTAGRO would like to express their gratitude and appreciation for New Zealand's continued support and collaboration aimed at the strengthening of applied agricultural research in Latin America and the Caribbean.

ANNEX I

PROJECT SUMMARY TABLE: ACTIVE

AS OF DECEMBER 31, 2014
TC ACTIVE PROJECTS FOR PROJECT NUMBER RG-X1202

Approval Number	Project Name	Approval Date	Approved Amount	Disbursed Amount	% of Disbursement	Committed Amount	Available Balance
FTG/RF-14652-RG	Silvopastoral systems in Central America	June-09-2014	$300.000	-	-	$300.000	$300.000
FTG/RF-14653-RG	Dairy systems in the Andean Region	June-09-2014	$368.000	-	-	$368.000	$368.000
FTG/RF-14654-RG	Networking and Capacity Building	June-09-2014	$139.318	$2.500	-	$136.818	$136.818
			$807.318	**$2.500**		**$804.818**	**$804.818**

ANNEX II

TRAINING REPORT
"MEASUREMENT OF GREENHOUSE GAS EMISSIONS IN LIVESTOCK SYSTEMS: BUILDING CAPACITY IN LATIN AMERICA AND THE CARIBBEAN"

MEASUREMENT OF GREENHOUSE GAS EMISSIONS IN LIVESTOCK SYSTEMS:
BUILDING CAPACITY IN LATIN AMERICA AND THE CARIBBEAN

Final Report
9th of April 2015

MEASUREMENT OF GREENHOUSE GAS EMISSIONS IN LIVESTOCK SYSTEMS: BUILDING CAPACITY IN LATIN AMERICA AND THE CARIBBEAN

1. Introduction

For the past few years, New Zealand and Latin American institutions have been collaborating to build capacity on measurement of GHG emissions in livestock under diverse farming systems. The collaboration has been done through agreements between the Regional Fund for Agricultural Technology (FONTAGRO) and the Ministry of Primary Industries (MPI) of New Zealand.

A first project under the leadership of INIA-Uruguay was started in 2011. This project has been instrumental in the adaptation of measurement techniques for enteric methane and nitrous oxide emissions in five countries (Uruguay, Argentina, Chile, Colombia and the Dominican Republic). Two other projects have been developed to work in eight countries (Bolivia, Colombia, Ecuador, Peru, Panama, Costa Rica, Nicaragua and Honduras). Other organizations (CATIE and IICA) are also involved in facilitating regional cooperation and providing technical back up. Given the limited knowledge on techniques to measure GHG emissions from livestock in many countries in Latin America, a Workshop on Livestock Systems Research and on-the-job training on Measurement of Greenhouse Gases was carried out by INIA Remehue in Osorno, Chile.

Training funds provided by MPI were used to cover the travel of 15 scientists to participate in the workshop which was followed by two weeks on-the-job training at the experimental station of INIA in Remehue in Osorno (Chile). Additionally, FONTAGRO funded the participation of other three attendees, including representatives from Paraguay and México.

2. Objective

Provide in-depth knowledge and skills regarding the application of techniques for measuring enteric methane and nitrous oxide from agricultural systems as well as familiarize participants with livestock systems research.

3. Content and methodology of the activities

3.1 Date

Workshop on Livestock Systems Research: 8th and 9th of January 2015
GHG determination and hands-on training course: 12th to the 23rd of January 2015

3.2 Venue

INIA Remehue, Osorno

3.3 Language

Spanish

3.4 Participants

Country	N° of participants	Name of participant	Institution
Bolivia	1	Rubén Dueñas	INIAF
Colombia	2	Sandra Loaiza	CIAT
		Wilson Barragán	CORPOICA
Costa Rica	5	Roberto Soto	INTA-MAG
		Francisco Arguedas	INTA-MAG
		Andreas Jenet	CATIE
		Diego Tobar	CATIE
		Cristobal Villanueva	CATIE
Ecuador	1	Francisco Clavijo	INIAP
Honduras	1	Mauricio Vargas	DICTA
Mexico	1	Jorge Bonilla	INIFAP
Nicaragua	1	Michael Vilchez	INTA
Panama	2	Adolfo Santos	IDIAP
		Domiciano Herrera	IDIAP
Paraguay	2	María Gorostiaga	IPTA
		Daniel Idoyaga	IPTA
Peru	1	Javier Arias	UNA LA MOLINA
Other participants (attending only the Workshop on Livestock Systems Research)			
Peru	Instructor	Carlos Velarde	IICA
Paraguay	National Director	Daniel Ydoyaga	IPTA
USA	Executive Secretary	Hugo Li Pun	FONTAGRO

3.5 Activity Topics

3.5.1 Workshop on Livestock Systems Research

Concepts and methodology for livestock systems research. Diagnosis and characterization of livestock systems. Key data and indicators. Design of improved systems. Ex-ante analysis. Field validation.

3.5.2 GHG determination hands-on training course

3.5.2.1 Nitrous Oxide

Theoretical aspects: Cycles and losses of nitrogen in soil, technical bases for measuring soil GHG. Practical aspects: preparation of plots and static chamber, measurement with manual chamber, application of fertilizers and inhibitors to soils, syringes preparation and minor devices, gas sampling in manual chambers and associated measurements, automated sampling systems, analysis by gas chromatography (GC), spreadsheets and emissions calculations of manual and automated systems, N_2O/NH_3 interactions. Implementation of best practices and safety. Final evaluation.

3.5.2.2 Enteric methane

Theoretical aspects: Technical Basis of SF6 methodology and permeation tubes, and use of laboratory methodologies. Practical aspects: practical work equipment building SF6 technique, assembly line, sampling and halter union, work with collars, analysis by gas chromatography (GC), laboratory methodologies, templates and SF6 emissions calculation. Implementation of best practices, safety and animal ethics. Final evaluation.

3.6 Activities

Both the initial workshop and the hands-on training course were organized with both theoretical and practical sections (see detailed programme in Annex 1).

Livestock systems research. In the initial workshop, the sections were organized to provide the basic understanding of the main factors affecting livestock production and the potential interactions that should be considered when socio-economic and environmentally evaluating livestock production systems. The practical section allowed the practice with examples of models that can be used for this purpose. For more details on the topics covered in this workshop, please see Dropbox link – presentations/Livestock systems.

GHG determination hands-on training course. The first section provided the necessary knowledge on biophysical processes affecting N_2O and CH_4 emissions from soils and animals, respectively. For more details on the topics covered in this section of the course please see Dropbox link – presentations/N2O/CH4/NH3. In the practical section, both a prototype of a static chamber for the determination of N_2O emissions from soils, and a canister for the determination of CH_4 emissions from bovines were built by the participants following the instructions of the teaching team. Photographs at different stages of this work can be found in the Dropbox link – photo sets. In the case of countries with more than one participant, only one prototype of each was built, due to financial constraints. CATIE was considered another country and so, they built their own set of prototypes.

Additional activities. To contribute to the exchange of research techniques and topics among participating countries, three additional activities were considered over the course period. These included i) a practical workshop on meat quality on grazed-based systems; ii) a visit to the Remehue Research farm, including visits to the dairy, beef and potato production units; and iii) a visit to the laboratories of INIA

Remehue, including the areas of biotechnology and molecular biology (both for potato production and soil analysis), meat quality and animal feed analysis. Photographs of these activities can be found in the Dropbox link-phot sets/visit to labs/visit to Remehue Research Station.
At the end of these activities, a short evaluation was carried out and a certificate per technique was given to all attendees.

3.7 Instructors and presenters

Dr. Julio Kalazich (INIA-Chile work on agriculture and climate change)
Dr. Hugo Li Pun (FONTAGRO projects on livestock and climate change)
Dr. Carlos Leon Velarde (Systems research, Perú)
Dr. Andreas Jenet (Central American experiences)
Dr. Marta Alfaro, Dr. Erika Vistoso, Mr. Luis Ramírez (N_2O determination)
Dr. Camila Muñoz, Dr. Emilio Ungerfeld (CH_4 determination)
Dr. Francisco Salazar, Mr. Josué Lagos (NH_3 determinations)
Miss Sara Hube (Automated system for N_2O determination; N_2O and SF_6/CH_4 determination by gas chromatography).

3.8 Materials distributed to participants

As part of the course, all attendees received:
1 Workshop workbook, containing basic information for their successful stay in Chile during the duration of the course, as well as technical information including the GRA Good Practices Guidelines for both N_2O determinations using static chambers and CH_4 determination using the SF_6 technique, and the list of basic materials required for these purposes. A copy of this document can be found in the following Dropbox link-Workbook: https://www.dropbox.com/sh/7pegirov3jq0xeu/AACxa5GcHJb17J_MZzvsMSJya?oref=e&n=73180687.
1 GALA proceeding, book of proceedings of the 1st Latin-American Conference on GHG emission from livestock production systems
1 pen drive, with all presentations used during the course

Dissemination of the activities

This included the coverage in the local newspaper and other media (Annex 2a) and information provided to the New Zealand Ministry of Primary Industries, as requested (Annex 2b).

Annex 1. Detailed program of activities carried out.

Day 1	Time	Day 2	Day 3	Day 4	Day 5
Wednesday 7th		**Thursday 8th**	**Friday 9th**	**Saturday 10th**	**Sunday 11th**
	8:30	Hotel-INIA Remehue	Hotel-INIA Remehue		
	09:00-10:30	Registration Welcome notes. Julio Kalazich, INIA's Director	Animal production systems, examples. Carlos Velarde		
	10:30-11:00	Coffee break	Coffee break		
	11:00-13:00	New FONTAGRO grants. Hugo Li-Pun (FONTAGRO)	National Inventories improvement, the example of dairy farms in Costa Rica. CATIE, Andreas Jenet		
	13:00-14:00	Lunch	Lunch	Free	Free
Arrival	14:00-16:00	FONTAGRO projects on livestock production and GHG emissions. 1) M. Alfaro, 2) CATIE, Andreas Jenet	GHG emissions in Latin American countries. M. Alfaro (Chile)		
	16:00-16:30	Coffee break	Meat quality workshop		
	16:30-17:30	Animal Production Systems, basic concepts. Carlos Velarde			
		Free	Free		

Day 6	Day 7	Day 8	Day 9	Day 10	Day 11
Monday 12th	**Tuesday 13th**	**Wednesday 14th**	**Thursday 15th**	**Friday 16th**	**Saturday 17th**
Hotel-INIA Remehue	Hotel-INIA Remehue	Hotel-INIA Remehue	Hotel-INIA Remehue	Hotel-INIA Remehue	
N cycling and losses in grazing systems	Hands-on work: static chambers construction	Hands-on work: vials, vaccum, sampling system	Hands-on work: treatments application	Flux estimation	
Coffee break	Coffee break	Coffee break	Coffee break	Coffee break	
Technical basis for N2O determination in soils	Hands-on work: static chambers construction	Hands-on work: plot lay out, chambers instalation	Hands-on work: N2O sampling	Flux estimation. N2O sampling	
Lunch	Lunch	Lunch	Lunch	Lunch	Free
Visit to Remehue Experimental Research Centre	Hands-on work: static chambers construction	Hands-on work: automated chambers	Hands-on work: gas cromatography analysis	FAQ	
	Coffee break	Coffee break	Coffee break	Coffee break	
	Hands-on work: static chambers construction	Gas cromatography determinations	Best practices and safety considerations-FAQ	Final discussion. Evaluation	
Free	Free	Free	Free	Traditional Chilean barbecue	

Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18
Sunday 18th	**Monday 19th**	**Tuesday 20th**	**Wenesday 21st**	**Thursday 22nd**	**Friday 23rd**	**Saturday 24th**
	Hotel-INIA Remehue	Hotel-INIA Remehue	Hotel-INIA Remehue	Hotel-INIA Remehue	Hotel-INIA Remehue	
	Introduction. Technical basis for the use of the SF6 technique	Hands-on work: Canister preparation	Hands-on work: work with animals	Flux estimation	Methodologies for NH3 determination	
	Coffee break	Coffee break	Coffee break	Coffee break	Coffee break	
	Tubes and required equipment	Hands-on work: Equipment check out	Hands-on work: work with animals	Best practices and safety considerations	Field practice of NH3 determination	
Free	Lunch	Lunch	Lunch	Lunch	Lunch	Departure
	Hands-on work: tubes preparation	Procedures for the SF6 technique	Hands-on work: Canister sampling, GC analysis	Energy metabolism in the rumen and CH4 production	Visit to laboratories, INIA Remehue	
	Hands-on work: Sampling line construction	Coffee break	Coffee break	Coffee break	Coffee break	
		Hands-on work: Sampling materials preparation	Hands-on work: GC analysis	Final discussion. Evaluation	Closing remarks and certificates	
	Free	Free	Free	Free	Free	

Annex 2. Appearance in local newspaper and other media coverage about the workshop Published in FONTAGRO's website

www.fontagro.org/category/noticias/noticias-de-prensa

FONTAGRO y Nueva Zelanda apoyan la capacitación para medición de gases de efecto invernadero en sistemas ganaderos en Chile

Enviado por fontagro el Lun, 02/02/2015 - 19:01.

in Noticias de Prensa

Prácticas de medición de gases en ganado. Chile

El taller en "Investigación en Sistemas Ganaderos y Medición de Emisiones de Gases de Efecto Invernadero" se llevó a cabo en Osorno y fue organizado por el Instituto de Investigaciones Agropecuarias de Chile.

Published in INIA's

Instituto de Investigaciones Agropecuarias
Ministerio de Agricultura, Chile

Inicio Nosotros Investigación

08 ene 2015 Noticias 0

INIA Remehue es cumbre de científicos de Latinoamérica y el Caribe

Expertos de 10 países se reúnen en Osorno para conocer experiencia local de investigación en sistemas ganaderos y a su vez capacitarse en medición de gases de efecto invernadero.

Osorno 07 de enero de 2015. Con la presencia del director nacional del Instituto de Investigaciones Agropecuarias (INIA), Julio Kalazich y el secretario ejecutivo del Fondo Regional de Tecnología Agropecuaria (Fontagro) Hugo Li Pun, se realizó la primera jornada de un encuentro que sostendrán hasta el 23 de enero, 18 científicos de 10 países de Latinoamérica en torno a la medición de las emisiones de gases de efecto invernadero en sistemas ganaderos.

El director nacional de INIA, junto con destacar el liderazgo de la institución del Ministerio de Agricultura en la materia, precisó que "en nuestra región, América Latina, los niveles de emisión de gases alcanzarían alrededor del 4.2% del total mundial, y la actividad agropecuaria contribuye alrededor del 21% de ese porcentaje y dentro del sector agropecuario la actividad ganadera, es responsable del 88% de estas emisiones. El cambio climático es una preocupación de todos los gobiernos; para Chile es un tema prioritario, nos propusimos como país bajar el 20% de las emisiones al año 2020, por lo tanto para INIA es parte de su plan estratégico, llevamos más de una década trabajando en esta temática. INIA es responsable de entregarla información anual del inventario de gases de efecto invernadero del sector agropecuario de Chile, que forma parte del reporte oficial que entrega el país".

website

Published in local newspaper


Festival. Bandas locales alistan sus 15 minutos sobre el escenario

Panoramas. Dictarán clases de yoga, masajes y tarot a orillas del río en Tril Tril

Rodeo. Exposición trae a la ciudad a 63 de los mejores caballos chilenos

Joven de 17 ... beber alco...

SITIO PILAUCO: HALLAN TROZO D...

Inia Remehue. Científicos de diez países estudian cómo medir gases de efecto invernadero

Actualidad

Científicos de 10 países estudian en Osorno técnicas para medir los gases de efecto invernadero

AGRO. Los investigadores de América Latina se reúnen en Inia Remehue para conocer la experiencia local en sistemas ganaderos y de producción agrícola.

Chile es pionero

Lanzan proyecto turístico adecuado a discapacitados

TURISMO. Programa Corfo mejora accesibilidad en este tipo de pasajeros.

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MEJORAMOS SU COTIZACIÓN

ANNEX III

UNAUDITED FINANCIAL STATEMENT AS OF DECEMBER 31, 2014

Regional Fund for Agricultural Technology

December 31, 2014

(Expressed in United States dollars)

Statement of Assets

Cash	**329,273**
Investments	**99,185,647**
Accrued interest on investments	**303,921**
Total Assets	**99,818,841**

	Prior Years Accumulated	Current Year	Total
Administrator accountability			
Funds contributed	**82,869,156**	**-**	**82,869,156**
Allocation of inflation income (loss)	**14,293,526**	**-**	**14,293,526**
Intangible Capital	**97,162,682**	**-**	**97,162,682**
Other Contributions	**-**	**471,076**	**471,076**
Income from investments	**13,836,160**	**2,982,400**	**16,818,560**
Income from cash accounts	**453,990**	**(844)**	**453,146**
Technical cooperation expense	**(12,101,213)**	**(1,567,315)**	**(13,668,528)**
Direct and indirect expenses	**(4,544,931)**	**(521,942)**	**(5,066,873)**
Contribution released from restrictions	**533,414**	**-**	**533,414**
	(1,822,580)	**1,363,375**	**(459,205)**
Total Accountability	**95,340,102**	**1,363,375**	**96,703,477**
Interfund accounts payable (receivable)			**40,158**
Undisbursed Grants			**3,054,234**
Other Liabilities			**20,972**
Total Liabilities and Accountability			**99,818,841**