



**JOINT FAO/IAEA DIVISION
OF NUCLEAR TECHNIQUES IN FOOD AND AGRICULTURE**



INTERNATIONAL ATOMIC ENERGY AGENCY
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

**Co-ordinated Research Project on “Integrated Approach for Improving
Small Scale Market Oriented Dairy Systems”
(D3.10.23)**

**REPORT ON
THE SECOND RESEARCH CO-ORDINATION MEETING**

21–25 July 2003

Asunción, Paraguay

1. Introduction

The FAO/IAEA Co-ordinated Research Project (CRP) on “Integrated Approach for Improving Small Scale Market Oriented Dairy Systems” (D3.10.23) was initiated in October 2001, with the award of ten Research Contracts, four Research Agreements and one Technical Contract. The first Research Co-ordination Meeting (RCM) was held at IAEA, Vienna, Austria from 8 to 12 April 2002.

2. Second Research Co-ordination Meeting

The second RCM was held at the Ministry of Agriculture and Livestock, Asuncion, Paraguay from 21 to 25 July 2003. It was attended by eight of the ten Research Contract (RC) holders, representatives of the other two RC holders, all four Research Agreement (RA) holders and the Technical Contract (TC) holder. The local organizer was Dra. Nidia Ferreira, the RC holder from Paraguay and the Scientific Secretary was Dr. Oswin Perera, the IAEA Project Officer (PO). The meeting agenda is given in **Annex 1** and the list of participants in **Annex 2**.

The specific objectives of the meeting were to:

- Review results from work conducted during the first phase of the project, including a Participatory Rural Appraisal (PRA) and an Economic Opportunity Survey (EOS);
- Provide guidelines on interpretation of results from these surveys and on undertaking cost-benefit analyses using partial budgets;
- Demonstrate the computer database Livestock Information Management Application (LIMA); and
- Discuss on-going studies and develop future work plans for the next phase, including specific investigations and intervention strategies.

Before the meeting, the RC holders were requested to prepare a written report and an oral presentation along the following lines:

- Introduction - brief description of the farming system and why it was selected for the present study;
- Methods - what has been done so far, including methodology used for the PRA, EOS and further investigations;
- Results - what has been found, including tabulated and summarized results with statistical analyses where relevant;
- Discussion - what the results mean, including references to previous work, what can be concluded and what are the implications for future work;
- Future work plans for the next two years, including investigations and interventions, with time frame;
- References to literature; and
- Resources available locally and through other projects, and those required from IAEA, for future activities.

The RA and the TC holders were requested to prepare a review or technical paper, in line with the specific expertise for which they were invited to participate in the CRP, to serve as resource materials and guidelines for specific activities in the work plans of RC holders.

The meeting was formally opened by Dr. Gustavo Morinigo, the Vice-Minister of Livestock for Paraguay (representing the Minister of Agriculture and Livestock). Mrs. Virginia González, President of the National Atomic Energy Commission, made an address outlining recent IAEA projects on agriculture in Paraguay. Dr. Perera welcomed the participants and thanked the host Government, the Ministry of Agriculture and other collaborating Institutes for their assistance in organizing the meeting.

The scientific proceedings commenced with Dr. Perera outlining the background to the CRP, its objectives and planned activities, and the expected outputs from the RCM. This was followed by presentations from the RC holders (or their representatives) and discussions after each presentation. The presentations by the RA and TC holders focused on aspects of PRA, interpretation of results from the EOS, reproductive management of cattle in the tropics, case studies on investigations of production problems in dairy cattle, guidelines for cost-benefit analyses using partial budgets and use of LIMA for recording farm data.

A field visit was made to the Cordillera region of Paraguay. Five small to medium scale market-oriented dairy farms were visited, the production systems were reviewed and the constraints and potential improvements were discussed.

During the later stages of the meeting each RC holder worked with the RA and TC holders to further develop and refine their individual work plans, including the protocols for investigations and subsequent interventions. They then made presentations on the updated work plans and provided electronic copies to the PO.

The overall project work plan and schedule of activities as envisaged in the project document were reviewed and updated in accordance with individual work plans and related practical considerations. Finally, conclusions and recommendations were drafted, presented and adopted. The meeting was formally closed by Dr. Valdir Welte, the FAO Representative for Paraguay.

3. Conclusions

- 3.1. The second RCM reviewed the work conducted by each participant as agreed at the first RCM. The farming systems approach used and the components of the CRP are illustrated in **Annex 3**. An assessment of the progress in each country is given in **Annex 4**.
- 3.2. The participants reiterated the relevance of the objectives of an integrated approach in addressing the problems of small scale market oriented dairy systems in their countries. They agreed that the activities and expected outputs, described in the project document, are in the process of being achieved.
- 3.3. The PRA and EOS were found to be very useful tools to ensure the participation of farmers. The constraints and perceptions identified ensured their contribution to the activities envisaged under the work plans.

- 3.4. The RCM was able to achieve the development of detailed work plans for the subsequent two year period in accordance with previous findings and requirements for each project.
- 3.5. All teams have identified appropriate investigations, which will address specific issues of importance to the CRP, for potential funding by other donors.
- 3.6. The schedule of activities has been retuned for the needs of individual countries.

4. Recommendations

- 4.1. The progress demonstrated at the RCM confirmed that the CRP must be conducted for the full five year period to achieve its objectives. The updated schedule of activities is given in **Annex 5**.
- 4.2. Those who have not completed the initial PRA and EOS should do so by December 2003.
- 4.3. Where investigations based on findings from the PRA and EOS have not commenced, they should be initiated as soon as possible.
- 4.4. Where technologies exist to address constraints, interventions should be discussed with RA and TC holders as well as the IAEA PO. These could be undertaken in parallel with ongoing investigations.
- 4.5. All participants should continue to maintain regular contact with the IAEA PO and with each other during implementation of the project.
- 4.6. LIMA and partial budget analyses should be used as tools during the second phase and the results will be reviewed at the third RCM.
- 4.7. Most investigations will have been completed and interventions initiated by January 2005. By this time a comprehensive report must be submitted to the RA and TC holders and IAEA.
- 4.8. The third RCM should be held in March 2005 in Africa. South Africa and Cameroon have indicated interest to host it.
- 4.9. The final RCM should be held in Asia in the last quarter of 2006. The findings from the five years of the CRP will be presented and prepared for publication at this RCM.

5. Follow-up

Electronic versions of all documents of the meeting, including written reports, Power-point presentations, individual work plans, meeting report and its Annexes were placed on a CD-ROM and distributed to all participants. The meeting report is also available on the Website of the Animal Production and Health Section of the Joint FAO/IAEA Division (<http://www.iaea.org/programmes/nafa/d3/index.html>).



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WAGRAMER STRASSE 5, P.O. BOX 100, A-1400 VIENNA, AUSTRIA
TELEPHONE: (+43 1) 2600, FACSIMILE: (+43 1) 26007, E-MAIL: Official.Mail@iaea.org, INTERNET: <http://www.iaea.org>

Annex 1

**Co-ordinated Research Project on “Integrated Approach for Improving
Small Scale Market Oriented Dairy Systems”
(D3.10.23)**

Second Research Co-ordination Meeting

21-25 July 2003

Asunción, Paraguay

PROGRAMME

Monday, 21 July

- 09.00 - 09.30 Overview of the Co-ordinated Research Project, objectives of the meeting and expected outputs
- *O. Perera (Project Officer, IAEA, Vienna)*
- 09.30 - 10.30 Administrative matters and Coffee/Tea
- 10.30 - 11.30 **Opening:**
- Welcome: *Dra. Nidia Ferreira, RCM Organizer*
 - IAEA's Technical Co-operation to Agriculture and Livestock in Paraguay: *Mrs. Virginia González, President, National Committee of Atomic Energy*
 - Address by IAEA Project Officer: *Dr. Oswin Perera*
 - Opening Address by Chief Guest: *Dr. Gustavo Morinigo, Vice-Minister of Livestock (representing the Minister of Agriculture and Livestock)*

Session I: Presentations by Contract Holders
Chairperson: Dr. C. Devendra

- 11.30 - 12.00 An economic opportunity survey and participatory rural appraisal on smallholder's dairy farms in Bangladesh
- *M. Shamsuddin, W.J. Goodger, M.S. Hossein, T. Bennett, K. Nordlund, M.M. Alam, Azizunnesa, T.U. Ahmed, F.Y. Bari & M. Hossain (Bangladesh & USA)*

- 12.00 - 12.30 Participatory rural appraisal and economic opportunity survey of small scale dairy farms in Cameroon
- *P.H. Bayemi, M.J. Bryant, N.J. Mbanya, D. Pingpoh, H. Imele, D. Cavestany, V. Tanya & F. Ekue (Cameroon)*
- 12.30 - 14.00 Lunch
- 14.00 - 14.30 Survey of smallholder dairy farms in the central province of Sri Lanka: Characteristics, economic opportunities and farmers' perceptions
- *H. Abeygunawardena, T. Abeyratne & I.S. Abeygunawardena (Sri Lanka)*
- 14.30 - 15.00 An economic opportunity survey on dairy farms in Paraguay
- *N. Ferreira & C. Cáceres (Paraguay)*
- 15.00 - 15.30 Integrated approach for improving small scale market oriented dairy systems
- *C. Gómez Bravo, I. Salazar Rodríguez & E. Alvarado Malca (Peru)*
- 15.30 - 16.00 Coffee/Tea
- 16.00 - 16.30 Integrated approach for improving small scale market oriented dairy systems in the North West Province of South Africa
- *L. Prozesky, C. Mc Crindle & J. Sebei (South Africa)*
- 16.30 - 17.00 Socio-economic factors and salient features influencing smallholder dairy production in the north east coast of Tanzania
- *B.M. Kessy, R. Nkya, Z. Lyimo, B. Msangi, F. Turuka & K. Mtenga (Tanzania)*

Tuesday, 22 July

Session I: Presentations by Contract Holders (Contd.)

Chairperson: Dr. N. Ferreira

- 08.30 – 09.00 Preliminary results of PRA and EOS in Pakistan
- *A. Ghaffar, M. Qasim Khan, Nematullah & M.I. Anjum (Pakistan)*
- 09.00 - 09.30 Initial results of dual purpose systems oriented to milk production, in the central savannas of Venezuela
- *P. Herrera, B. Birbe, O. Colmenares, N. Martínez & C. Domínguez (Venezuela)*
- 09.30 - 10.00 Improving small scale market oriented dairy systems in Tunisia
- *J. Rekhis, N. Slimane, A. Ben Younes, A. Mzah, M. Laamouri & F. Saaidani (Tunisia)*
- 10.00 - 10.30 Coffee/Tea

Session II: Presentations by Agreement Holders

Chairperson: Dr. D. Cavestany

- 10.30 - 11.15 Improvement of dairy production systems
- *C. Devendra (Malaysia)*
- 11.15 - 12.00 Interpretation of Economic Opportunity Survey (EOS) and follow-up
- *W.J. Goodger, K. Nordlund, M. Shamsuddin & T. Bennett (USA)*
- 12.00 - 12.45 Livestock Information Management Application (LIMA): a tool for better understanding of farm performance
- *M. Garcia (Peru)*
- 12.45 - 14.00 Lunch

Session II: Presentations by Agreement Holders

(Contd): *Chairperson: Dr. M. Garcia*

- 14.00 - 14.45 Dairy cattle reproduction in the tropics. Breed differences and metabolic and hormonal profiles
- *D. Cavestany, E. Corea, O. Silva & A. Meikle (Uruguay)*
- 14.45 - 15.30 Take a broad view: Keep an open mind: Target the most important
- *D. Whitaker (UK)*
- 15.30 - 16.00 Coffee/Tea
- 16.00 - 17.00 Workshop on partial budgeting
- *W.J. Goodger, C. Eisele & G. Frank (USA)*
- 17.00 - 17.30 General Discussion

Wednesday, 23 July

- 08.00 - 18.00 **Field Visits: Dairy farms in the Cordillera Region of Paraguay**

Thursday, 24 July

Session III: Review and Work Plans

Chairperson: Dr. W. Goodger

- 08.30 - 10.00 Review of progress, summary of achievements and comments on proposed work plans
- 10.00 - 10.30 Coffee/Tea

10.30 - 12.30	Individual discussions between Contract Holders and Agreement Holders
12.30 - 14.00	Lunch
14.00 - 15.30	Finalisation of individual work plans
15.30 - 16.00	Coffee/Tea
16.00 - 17.30	General discussion on DSS, interventions and LIMA

Friday, 25 July

Session IV: Presentation of Work Plans, Conclusions and Recommendations
Chairperson: Dr. D. Whitaker

08.00 - 10.30	Presentations by Contract Holders (each of 10 min + 5 min discussion)
10.30 - 11.00	Coffee/Tea
11.00 - 12.00	Conclusions and recommendations
12.00 - 13.00	Finalization of individual work plans and updating schedule of project activities
13.00	Closure of meeting: <i>Dr. Valdir Welte - FAO Representative for Paraguay</i>

Annex 2

FAO/IAEA Co-ordinated Research Project (CRP) - D3.10.23 Integrated Approach for Improving Small Scale Market Oriented Dairy Systems

List of Addresses

Research Contracts:

Dr. Mohammed Shamsuddin
Department of Surgery and Obstetrics
Faculty of Veterinary Science
Bangladesh Agricultural University
Mymensingh 2202
Bangladesh

Fax: +880-91-55810

Phone: +880-91-556957 Ext.2160; +8809162092 (Residence)

E-mail: m-shams@royalten.net

Mr. Henri Dieudonné Bayemi Pougue
Institute of Agricultural Research for Development (IRAD)
Cattle section, Bambui
B.P.51 Bamenda
Cameroon

Fax:

Phone: +237-7840273

E-mail: hbayemi@yahoo.fr;

Dr. Abdul Ghaffar
ABG, Animal Sciences Institute
National Agricultural Research Centre (NARC)
Park Road
Islamabad 45500
Pakistan

Fax: +92-51-9255221

Phone: +92-51-9255071

E-mail: parc@isb.paknet.com.pk; drghaffar@yahoo.com

Dra. Nidia Balbina Ferreira
Sub-Secretaría de Estado de Ganadería
Laboratorio de Investigación y Diagnóstico Veterinario (LIDIAV)
Av. Ciencias Veterinarias y Primera
Km 10.5 San Lorenzo
Paraguay

Fax: +595 21 586136

Phone: +595 21 586136

E-mail: nidia@quanta.net.py;

Dr. Albertina Ivonne Salazar Rodríguez (representing Dr. Carlos Gómez Bravo)
Universidad Nacional Agraria La Molina
Departamento de Nutrición
Av. La Universidad s/n La Molina
Lima
Peru

Fax: +51-14-3495617 - 3495618
Phone: +51-14-3495617 - 4514363
E-mail: sri@lamolina.edu.pe

Dr. Leon Prozesky
Section of Pathology, Department of Paraveterinary Sciences
Faculty of Veterinary Science
University of Pretoria
Private Bag X04
Onderstepoort 0110
South Africa

Fax: +27-12-529-8303
Phone: +27-12-529-8054
E-mail: lprozesky@op.up.ac.za

Dr. Harischandra Abeygunawardena
Dean, Faculty of Veterinary Medicine & Animal Science
University of Peradeniya
Peradeniya
Sri Lanka

Fax: +94-8-388205
Phone: +94-8-388205; Res: 94-8-232172
E-mail: dean@vet.pdn.ac.lk; h_abey@yahoo.com

Dr. Jamel Rekhis
Ecole Nationale de Médecine Vétérinaire
Département de Productions Animales
Nutrition et Alimentation
2020 Sidi Thabet
Tunisia

Fax: +216-71-552441
Phone: +216-71-552200
E-mail: jrekhis@yahoo.fr; rekhis.jamel@iresa.agrinet.tn

Prof. Beda M. Kessy
Dept. of Vet Surgery, Obstet and Reproduction
Faculty of Veterinary Medicine
Sokoine University of Agriculture
P.O. Box 3000, Chuo Kikuu
Morogoro
United Republic of Tanzania

Fax: +255 23 2604647
Phone: +255 23 2603177 or +255 23 2603511-4
E-mail: kessy@suanet.ac.tz; kessybeda@hotmail.com

Prof. Omar Colmenares (representing Dr. Pablo Herrera Díaz)
Universidad Rómulo Gallegos
Facultad de Agronomía,
Dirección de Producción Animal
Vía El Castrero, San Juan de Los Morros
Estado Guárico
Venezuela

Fax: +582432454120

Phone: +582464311083

E-mail: ocolmena@lycos.com; ocolmena@mailcity.com

Research Agreements:

Dr. Canagasaby Devendra
Devendra Consulting
130A Jalan Awan Jawa
52000 Kuala Lumpur
Malaysia

Fax: +60-3-79837935;

Phone: +60-3-79839307

E-mail: cdev@pc.jaring.my

Dr. David Whitaker
Dept. of Veterinary Clinical Studies
University of Edinburgh, Easter Bush Veterinary Centre
Roslin, Midlothian, EH25 9RG
United Kingdom

Fax: +44 131 445 5728

Phone: +44 131 445 4760

E-mail: D.Whitaker@ed.ac.uk;

Dr. Daniel Cavestany
Instituto Nacional de Investigación Agropecuaria
INIA La Estanzuela
C.Correos 39173
70000 Colonia
Uruguay

Fax: +598574 8012

Phone: +5985748000 ext 1409

E-mail: cavestan@inia.org.uy; dancaves@tecnet.com.uy

Dr. William Goodger
University of Wisconsin-Madison
Department of Medical Sciences
School of Veterinary Medicine
2015 Linden Drive West
Madison, WI 53706
USA

Fax: +1-608-8337165
Phone: +1-608-2637896
Cellular: +1-608-770-1448
E-mail: wgoodger@facstaff.wisc.edu; billvet@goamerica.net

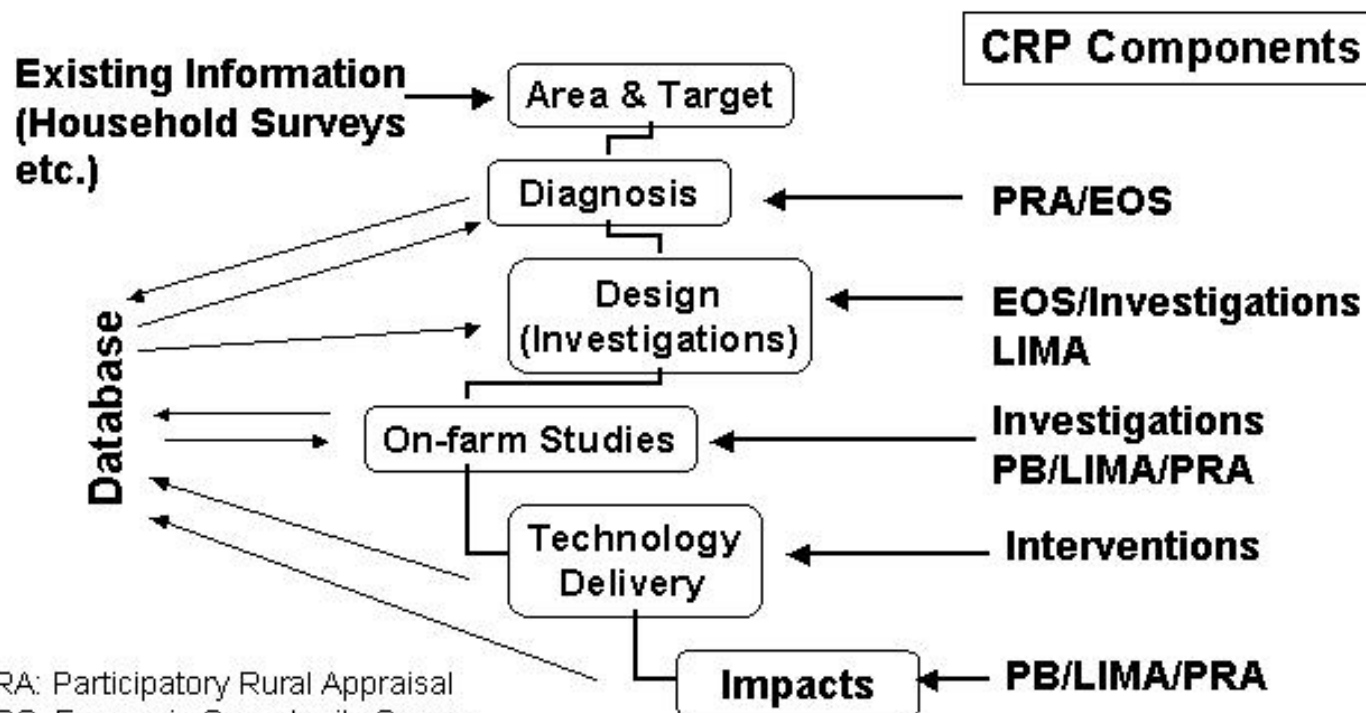
Technical Contract:

Dr. Mario García-Podesta
Computación en Ganadería
Los Ficus 144 La Molina
Lima 12
Peru

Fax: +51-1-3650293
Phone: +51-1-3650293
E-mail: garciam@terra.com.pe; m_garcia_p@hotmail.com

Annex 3

Farming Systems Research Methodology and Components of the Holistic CRP



PRA: Participatory Rural Appraisal
EOS: Economic Opportunity Survey
PB: Partial Budgeting
LIMA: Livestock Information Management Application

Annex 4

Second RCM – Assessment of Progress and Current Status of Work (Problems identified in surveys and the investigations and interventions that are on-going or planned are given in parentheses)

(AFC – Age at first calving; CI – Calving interval; BCS – Body condition scoring)

Research Contract	Participatory Rural Appraisal (PRA)	Economic Opportunity Survey (EOS)	Investigations	Interventions
Bangladesh	4 locations, 33 farms; Completed. (Marketing, vet/AI services, milk yield, mastitis, feeding, infertility)	4 locations, > 1400 farms; Completed. (Milk yield, lactation length, AFC, CI)	On-going. (Feeding, Mastitis, infertility, calf health)	On-going. (Vaccination for Foot and Mouth disease and anthrax, farmer to farmer technology transfer, milk marketing)
Cameroon	1 location, 50 farms; Completed. (Milk yield, marketing, feeding, breeding, health, milk spoilage)	1 location, 12 farms; On-going. (Milk yield, AFC, CI)	Planned. (Feeding effects on reproduction)	On-going. (Milk marketing, feeding, farmer training)
Pakistan	2 Locations; 56 farms; Completed. (Calf mortality, mastitis, genetics, fertility, feeds)	2 locations, 56 farms; Completed. (Milk yield, lactation length, AFC, CI;	Planned. (Post partum fertility, nutrition, disease control)	Planned.
Paraguay	1 location, 15 farms; Completed. (AFC, feeding, calving season)	1 location, 11 farms; Completed. (Milk, AFC, CI)	Planned. (Reproductive management for replacement heifers)	Planned. (Feeding schedule)
Peru	1 location, 18 farms; Completed. (Lack of forage, knowledge, water)	1 location, 16 farms; 2 done; On-going.	Planned. (Identify local feed resources, disease diagnosis, fertility)	Planned. (Feeding programme, farmer training, disease control, fertility management, records)
South Africa	1 location, 15 farms; Completed. (Farmer training, markets, nutrition, vet services)	1 location, 15 farms; On-going.	Planned. (Nutrition, diseases, milk spoilage)	Planned. (Farmer training, feeding management, markets)

Research Contract	Participatory Rural Appraisal (PRA)	Economic Opportunity Survey (EOS)	Investigations	Interventions
Sri Lanka	3 locations, 16 farms; 14 done; On-going. (Milk price, forage scarcity, concentrate price, milk spoilage)	2 locations, 85 & 60 farms completed; 40 to be done; On-going. (AFC, CI, milk yield)	On-going. (Repeat breeding, mastitis)	Planned. (Feeding, fertility management, product value addition)
Tanzania	3 locations, 25 farms; Completed. (Lack of societies, milk price, feed, fertility, diseases)	3 locations, 25 farms; Completed. (AFC, CI, lactation length, milk yield)	Planned. (Tick-borne diseases, fertility, breeding management)	Planned. (Feeding and fertility management, disease control, farmer training)
Tunisia	3 locations, 60 farms; Completed. (Unbalanced ration, fertility, forage availability, milk quality, heat stress, parasitism)	3 locations, 30 farms; On-going.	3 locations, 3 farms started; On-going. (Feed supply and analysis, milk quality, BCS, heat detection, disease diagnosis)	Planned. (Ration formulation, disease control, reproductive management)
Venezuela	3 locations, 45 farms; Completed. (CI, poor feeding, weaning weight, lactation length, health control, records)	3 locations, 15 farms; On-going.	Planned. (Feed resources, forage pellets, disease diagnosis)	Planned. (Dry season feeding management - legume trees, cassava and bean foliage in UMB; suckling management, farmer training, recording system)

Annex 5

FAO/IAEA Co-ordinated Research Project (CRP) on

“Integrated approach for improving small scale market oriented dairy systems” (D3.10.23)

Time Schedule of Activities (updated July2003)

Period	Activity
January 2001	Project Document provided to prospective Institutes and invitation to submit proposals for Research Contracts and Research Agreements.
Jan–June 2001	Preparation of proposals, including team composition, site selection, background documentation and literature survey.
Aug–Nov 2001	Evaluation of proposals and award of 10 Research Contracts, 1 Technical Contract and 4 Research Agreements.
Nov 2001– March 2002	IAEA develops preparatory material for 1 st RCM ^a , including guidelines for conducting a PRA ^b and EOS ^c and draft version of LIMA ^d database for use during the investigation and intervention phases. Contract Holders complete background information on selected farming system, develop strategy for PRA and do pre-tests on PRA and EOS.
8–12 April 2002	1 st RCM: to present work plans, provide instructions and training in PRA (interview guidelines and procedures) and EOS (completing the Excel worksheet and interpretation), demonstrate the draft LIMA database, reinforce team management skills and finalize work plans.
April 2002 – July 2003	Implementation of PRA on a minimum of 20 farm families and stakeholders, and selection of 10-15 farms for further study. Implementation of EOS and periodic review. Implementation of investigations (continuous according to needs) together with necessary laboratory analyses. Formulation of interventions based on information from PRA, EOS and investigations.
21–29 July 2003	2 nd RCM: to review results from PRA and EOS, provide guidelines on investigations and use of partial budgets for cost-benefit analysis, demonstrate the LIMA database, update work plans and formulate intervention strategies.
July 2003 – December 2004	Completion of data analyses from PRA and EOS. Completion of investigations and initiation of interventions. Monitoring, data collection, analysis and evaluation.
January 2005	Submission of report to IAEA (with copies to Agreement holders and Technical Contract holder).
March 2005	3 rd RCM: to discuss results of completed surveys, investigations and partial budget analyses, review on-going interventions and finalise an integrated strategy for implementation.
April 2005 – June 2006	Implementation of integrated strategy for interventions; continued monitoring, data collection, analysis and evaluation.
July – Oct 2006	Writing final report in the form of a scientific paper for publication.
Nov. 2006	Final RCM: to report on the results of the project and to prepare manuscripts for publication as an IAEA TECDOC.

^aResearch Coordination Meeting;

^bParticipatory Rural Appraisal;

^cEconomic Opportunity Survey;

^dLivestock Information Management Application.