AFRA
African Regional Co-Operative Agreement

“ Increasing and Improving Milk and Meat Production”

AFRA Project III-2 (RAF/5/046)

REPORT

Task Force Meeting to “Review results from cost benefit analyses and regional supply of progesterone tracer, and finalize cost-recovery strategy”

1 - 5 March 2004
Pretoria, South Africa
1. Background

An IAEA/AFRA Regional Technical Co-operation Project (RAF/5/046) has been implemented from January 1999 and has the objectives of: (a) assessing and improving artificial insemination (AI) programmes for small-scale dairy farmers; (b) establishing sustainable early non-pregnancy diagnosis (N-PD) and related services; and (c) harmonizing managerial and field practices within the region. The radioimmunoassay (RIA) for measurement of progesterone in milk and blood of cattle and use of a customized computer database AIDA Africa (Artificial Insemination Database Application for Africa) form important components of an integrated approach to these activities.

The third project review and planning meeting was held in March 2002 in Addis Ababa and a Task Force meeting was held in February 2003. The latter addressed aspects of (a) cost-benefit analyses and impact assessment of the project’s activities and outputs; (b) cost-recovery for N-PD and related services provided to farmers; and (c) regional production and distribution of RIA reagents, especially the $^{125}\text{I}$ progesterone tracer. It was recommended that a follow-up meeting should be held to review the results obtained by the participating countries in respect of cost-benefit analyses and use of regionally produced tracer. Furthermore, as the current project will conclude in December 2004, there was a need to identify areas that require further support, while building on the achievements of the current project, in order to assist small-scale cattle producers in AFRA Member States.

This meeting was therefore organised in the form of a Task Force, with the following objectives:

- Review results from cost-benefit analyses done by each country and finalize the strategy for future cost-recovery;
- Review results obtained from RIA conducted using tracer produced within the region, discuss any problems encountered in technical or logistic aspects and recommend solutions;
- Determine future needs for a regional project to further advance cattle production and draft a project framework.

2. Task Force Meeting

The meeting was hosted by the Taurus Stock Improvement Co-operative, Irene, Pretoria, and the Nuclear Energy Corporation of South Africa (NECSA), Pretoria. It was attended by all 5 Project Co-ordinators (PCs) who were selected on the basis of their annual progress report for 2003 (from Algeria, Burkina Faso, Ethiopia, Uganda and Zambia), the Project Scientific Consultant (PSC; PC for Tunisia), the PC for South Africa and the representative of NECSA responsible for producing $^{125}\text{I}$ progesterone tracer. It was supported by an IAEA expert, Dr. P. Anandajayasekaram, and the IAEA Technical Officer (TO), Dr. Oswin Perera.
At the opening Mr. Chrisjan van der Vyver, General Manager of Taurus Stock Improvement Co-operative, welcomed participants on behalf of the local host institutes. The IAEA TO thanked the Government of South Africa, the host institutes and local organisers for their assistance in holding the meeting. Ms. Vuvu Msutwana-Qupe, the AFRA National Co-ordinator, also attended the first session and participated in discussions.

The meeting was organized in the form of presentations, discussions, group work and visits to laboratories and livestock farms. The meeting agenda is in Annex I and the list of participants is in Annex II. Presentations commenced with a paper by the IAEA TO on an overview of the project RAF/5/046 and the specific objectives, activities and expected outputs for the meeting. This was followed by presentations by each PC dealing with the three main objectives of the meeting. The IAEA expert presented lectures on “Impact Assessment” and “Cost-Benefit Analysis” and conducted several discussion sessions on the methodologies and practical aspects of conducting these in relation to agricultural research and development projects.

A visit was made to the milk quality assay laboratory operated by Taurus at the premises of the Agricultural Research Council of South Africa. This laboratory analyses over one million milk samples per year for milk quality (fat, protein, somatic cell count, urea, etc.) as a service to cattle breeders for making decisions on feeding and management, and in support of progeny testing programmes. An RIA laboratory has been established in the premises for measurement of milk progesterone and studies are underway to determine the feasibility of integrating this with the on-going milk testing programme.

Two large dairy cattle farms were visited, one consisting of 800 Ayrshire cows and the other 600 Jersey cows. The facilities were inspected and the management, feeding and breeding practices were discussed. A medium scale milk processing facility handling 25,000 litres of milk per day was also visited on the premises of the first farm.

A full day was spent at the NECSA premises in Pelindaba. A briefing on the current activities was followed by visits to the research reactor “Safari 1” and the laboratories for progesterone iodination and RIA. Subsequently, Ms. Judith Wagener made a presentation on “Technical and logistic aspects of production and supply of progesterone tracer”. This was followed by discussions on the results obtained using the NECSA tracer, arrangements for shipments to counterparts in other countries, problems encountered and possible solutions.

Group discussions were held during the meeting, and continued in the evenings at the hotel, to formulate a new project proposal to be submitted to AFRA and IAEA for consideration under the programme for the biennium 2005-2006. The draft proposal, which is for a four year project entitled “Improvement of livestock productivity through an integrated application of appropriate technologies”, is in Annex III.

Discussions were held on the arrangements for holding the final project review meeting in Burkina Faso from 4-8 October 2004. All PCs will be required to prepare a comprehensive report, in the form of a scientific paper, on the activities and results obtained during the full six year period of the project. A format and guidelines were therefore developed for writing this final report, and is in Annex IV. Finally, conclusions and recommendations were drafted, discussed and adopted.
Electronic versions of the following documents relating to the meeting were placed on a CD-ROM and distributed to all national PCs of AFRA Member States participating in the project:

- Meeting report and annexes;
- Reports and presentations of PCs;
- Lecture notes, presentations and handouts of the expert;
- Presentations and handouts of the TO;
- Photographs of the meeting and field visits.

3. **Conclusions**

3.1. *Achievements and problem identification*

3.1.1. All participating AFRA Member States (MSs) have made significant advances and achievements during the past two years. These include: (a) improving existing RIA laboratories and undertaking routine services to livestock farmers in partnership with national AI services and/or breeder’s organizations; and (b) conducting training, education and sensitization activities for livestock professionals, AI technicians, extension staff and farmers.

3.1.2. Most MSs have completed studies to determine the efficiency of AI services and the status of reproductive management by farmers, and have identified weaknesses at both levels. They are in the process of implementing remedial measures against these impediments to improving productivity.

3.1.3. Two critical problems identified at farm level were the cost of non-pregnancy diagnosis (N-PD) service (which should be minimised by various stakeholders contributing towards the cost) and timely delivery of the results back to farmers for implementing remedial actions.

3.2. *Cost-benefit analysis and impact assessment*

3.2.1. Most MSs have attempted to assess the cost of analyzing milk samples for progesterone by RIA and for provision of routine Non-Pregnancy Diagnosis (N-PD) services to farmers.

3.2.2. Some MSs have also attempted to determine the economic benefits to farmers from N-PD services, but the benefits have not been fully quantified at the level of the target group.

3.2.3. No comprehensive impact assessment has been done by any of the MSs.

3.2.4. This meeting provided specific guidelines and excellent instructions on cost-benefit analysis and impact assessment.

3.3. *Supplies of tracer, other RIA materials and sustainability*

3.3.1. Progesterone tracer is being produced at NECSA and has been delivered during the latter part of 2003 to all AFRA MSs except Burkina Faso and Tunisia. Delivery to these two MSs have posed problems due to refusal by the airlines operating to these countries to carry radioactive material.

3.3.2. Losses due to evaporation or degradation of NECSA progesterone tracer in transit or storage was reported by some MS, particularly for the first shipment. Subsequent
shipments have been of better quality and many MSs have obtained RIA results that were comparable to those with NETRIA tracer.

3.3.3. RIA labs in MSs are operating at different levels of success and efficiency, but most MSs have started making their own progesterone standards.

3.3.4. Most MSs are running centralized N-PD services and need to establish peripheral mini-assay laboratories to expand the service.

3.4. **Mechanisms for cost recovery**

3.4.1. Cost recovery strategies for the N-PD service, collateral funding, revolving fund, cost-sharing, etc., are being explored in most MSs.

3.4.2. Cost recovery is feasible in the more intensive and market oriented farming systems in some MSs. The small scale production systems will require a gradual introduction of cost recovery strategies.

4. **Recommendations**

4.1. Progesterone RIA should be integrated into AI programmes of MSs and a cost-effective N-PD service should form a component of a multifaceted service package provided to farmers for improving cattle productivity.

4.2. NECSA and MSs should together explore means to ensure that tracer reaches all end users in a timely and cost effective manner.

4.3. NECSA should continue to explore procedures for overcoming the variations in activity and evaporation that has occurred during transit.

4.4. All MSs should ensure that monitoring and evaluation becomes an integral part of project planning and implementation.

4.5. National strategy should be developed to ensure continued and sustainable delivery of the N-PD service (including upgrading of laboratories) beyond the life of the AFRA project.

4.6. In-service training of livestock professionals, AI technicians and extension staff should be provided on a continuing and sustainable basis.

4.7. Commercial or economic viability of all service activities should be assessed and documented.

4.8. A regional laboratory should be identified and supported to undertake external quality assurance (EQA) for the progesterone RIA.

4.9. The final project review meeting should be held in Burkina Faso from 4-8 October 2004.

4.10. A comprehensive report should be prepared by each PC in accordance with the format and guidelines developed during this meeting and submitted to the IAEA and the PSC by 15 August 2004.
4.11. The proposal for a new project which was developed during this meeting should be supported by AFRA and IAEA, in order to assist farmers to fully utilize the improved offspring resulting from better AI services and reproductive management of cattle.

**ANNEXES**

Annex I: Agenda

Annex II: List of Participants


Annex IV: Framework for the Report to be prepared by each National Project Coordinator for the Final Meeting, to be held 4-8 October 2004 in Burkina Faso.