NLH
AGRICULTURAL UNIVERSITY OF NORWAY
Noragric
Center for Environment and Development Studies

The SSE Programme

Project review of the Development Fund's

Veterinary Assistant Training Programme (VATP)

Review team:

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EXECUTIVE SUMMARY

A mission initiated by Noragric, Agricultural University of Norway, comprising Arve Lund (team leader) and Aregay Waktola was carried out in the period 23. - 29. June 1997. The objective was to review the Veterinary Assistant Training Programme (VATP) implemented by the Development Fund (DF) through the Ministry of Agriculture (MoA) in Eritrea.

Three decades of a devastating war has left Eritrea with a weak human resource base. Therefore, the Government has given priority to professional upgrading of staff. The Animal Resource Department (ARD) in MoA has developed a strategic plan for different categories of its personnel. The VATP is part of this plan. The objective of this programme is to improve animal husbandry in Eritrea through better trained personnel.

On-site visits and open discussions with key personnel in the MoA, at the Training centre and collaborating institutions provided relevant information and good insight into the project and formed the basis for this report.

A training centre has been constructed with adequate classrooms, dormatory and related buildings. However, a laboratory for teaching of the students does not exist. The training centre is located near to ARD and the Central Veterinary Laboratory (CVL) and benefits from their facilities, such as clinics, autopsy room and lab. Further extension of the centre's facilities should consider the building of a laboratory. Training material for each student like textbooks, some essential equipment etc are vital, but have not been procured. The centre can accommodate other courses run in parallell to the Veterinary Assistants (VA) Diploma course. This has been done to a certain extent, but there is room for improvement. Planning of short courses, seminars etc should be done for each semester in order to fully exploit the premises.

A Diploma course for VA has been developed and the curriculum seems relevant and corresponds to the job description for VA. The first batch of students was enrolled in 1996 and will finish in autumn 1998. The Team endorses fully the selection procedure. An agreement has been made between MoA and UoA regarding part time recruitment of instructors and teaching staff. ARD also contributes to the teaching as well as staff employed by the Centre. The first year courses were handled with relative ease in co-operation with the University of Asmara and CVL. The second year courses are more demanding in terms of staff, textbooks, equipment and related supplies, and with regard to teachers/instructors in the various subjects of veterinary medicine the Centre faces a rather critical problem. This issue must be given top priority. It is suggested to recruit instructors from neighbouring countries and reexamine possibilities to involve a teacher from the Norwegian College of Veterinary medicine (NCVM). This necessitates an urgent follow-up of requests for additional funding for 1997 and 1998. In discussions with Debre Zeit (following the stay in Asmara), teaching assistance from Faculty of Veterinary Medicine seems promising. A revised budget should be developed. There will also be a need to revise the teaching plan so that the

subjects are taught in blocks rather than to be spread out during the whole semester. This should facilitate recruitment of external instructors.

MoA has the administrative responsibility for the VATP. It is suggested to transfer the Diploma course to UoA and thus also obtain accreditation. An initiative should be taken in order to start this process.

The entire input to the VATP comes from NORAD through the DF and was in the order of NOK 700.000.- (also including overhead and administrative costs to DF) in 1996. The financial situation of Eritrea is rather difficult so the country will still depend on external funding for years to come in several areas also including the livestock sector. However, in order to meet an eventual withdrawal of external funding, a plan for phasing out of Norwegian support and phasing in of the Eritrean government should be developed. Initially, DF planned to pull out of the project after graduation of the first batch of students. However, DF has indicated that it may be willing to consider a second phase of the VATP. At the present stage the Team recommends continued support and suggests enrollment of a second batch of VA students. According to the human resource strategy plan there is still need for education of VA. Further, DF should also in the future be responsible on the Norwegian side. This NGO has extensive knowledge about the country, its people and culture from longlasting project experience in Eritrea.

The Team fully supports the priority given by the Eritrean authorities to upgrade staff intended for positions at sub-zonal level in the rural areas. Animal production and health are areas of great importance for a livestock country like Eritrea. The impact of the VATP programme on animal husbandry remains to be seen. Future projects focusing on livestock related aspects, i.e. animal health and production, at sub-zonal and village level, should be considered.

ACRONYMS

AUN	Agricultural University of Norway
ARD	Animal Resource Department
CoAaAS	College of Agriculture and Aquatic Sciences
CVL	Central Veterinary Laboratory
DF	Development Fund
GoE	Government of Eritrea
MoA	Ministry of Agriculture
NCVM	Norwegian College of Veterinary Medicine
NORAD	Norwegian Agency for Development Co-operation
NORAGRIC	Centre for International Environment and Development Studies
SSE	Sahel-Sudan-Ethiopia Programme
ToR	Terms of Reference
UoA	University of Asmara
VA	Veterinary Assistants
VATP	Veterinary Assistants Training Programme

1 INTRODUCTION

Since 1991 Centre for International Environment and Development Studies (Noragric), Agricultural University of Norway (AUN) has assisted the Norwegian Agency for Development Co-operation (NORAD) in the management and administration of the Sahel-Sudan-Ethiopia (SSE) Programme. One of the projects in Eritrea, the "Veterinary Assistant Training Programme" (VATP), is implemented by the Development Fund (DF) on the Norwegian side and started off in 1992. Ministry of Agriculture (MoA) is responsible for implementation on the Eritrean side. The project is due to finish after graduation of the first batch of students, i.e. autumn 1998. A second phase of the project may be considered by the DF. Hithereto the project has never been reviewed. Therefore, Noragric suggested to undertake such a mission. The issues to be covered are described in the Terms of Reference (ToR) (Annex 1) and include:

- an overall view of the implementation and progress
- the institutional set-up and sustainability
- future prospects

Dr. Aragay Waktola and Dr. Arve Lund, Noragric, comprised the review team.

A programme was set up in agreement with MoA (Annex 2). Key persons met during the mission are listed in Annex 3.

The mission was conducted in the period June 23. - 29. 1997.

2 BACKGROUND

2.1 Livestock in Eritrea

The State of Eritrea came into being in May 1993 after three decades of a devastating war which reduced number of animals by about 50% and left the country with a weak human resource base. It is estimated that 80% of the population is dependent on subsistence agriculture of which approx. 25% are pure pastoralists who solely earn their living from livestock. Livestock rearing is a major economic activity in the agropastoral and sedentary mixed farming systems as sources of food, cash and provision of drought power. Approx. 57% of the total area of the country is classified as grazing land which is only suitable for livestock production. The livestock population in Eritrea is presented in Annex 4. Eritrea is highly populated with ruminants especially cattle and goats. The ratio of animal health workers to "Tropical livestock unit" (TLU) has been estimated, and compared with most Sub-Saharan countries the ratio is rather low. By giving ex-fighters and secondary school leavers a six months training course in livestock and general agriculture, MoA has tried to meet the needs for field workers in the rural areas. However, there is still a critical need for medium level trained personnel in the animal health sector. ARD has a human resources

development programme for the period 1996-2001 (Annex 5). A rather substantial increase in numbers of people in the different categories of professional staff is foreseen.

The livestock disease situation is considered as one of several major constraints for livestock development in Eritrea. A range of serious diseases are endemic in the country including: rinderpest, foot-and-mouth disease, anthrax, blackleg, haemorrhagic septicaemia, trypanosomiasis, contagious bovine and caprine pleuropneumoniae, sheep pox, pasteurellosis, peste des petits ruminants, brucellosis, tuberculosis, Newcastle disease. Of these, rinderpest is considered by far the most important. In addition, all livestock suffer from a range of internal and external parasites.

2.2 Structure of the animal health service in Eritrea

2.2.1 *Central level*

MoA has recently been reorganised (Annex 6) and comprises three departments. The Animal Resource Department (ARD) is responsible for all matters related to the livestock sub-sector except Livestock research and the professional training of personnel. ARD comprises three divisions one of which is The Animal Health Division consisting of two units:

1) Disease prevention and control unit
2) Veterinary public health and quarantine unit.

In the Research and human resources development department the Livestock division comprises:

1) Diagnostic and research laboratory unit
2) Animal breeding and production unit.

In the Human resource development division there are two units one of which is the Training unit.

At central level the main occupation is policy making and preparation of official regulations and guidelines.

Currently ARD is administratively responsible for the VATP.

2.2.2 *Functions at regional and local levels*

The animal health workers are responsible for implementation of the regulations and guidelines set up by MoA. Reporting to the authorities about disease outbreaks, diagnoses and other observations of importance for animal health and production is an important task of all personnel working in the field.

Supply of vaccines, medicines etc is channeled through the system described below. The livestock owners pay for drugs and the money goes into a revolving fund.
The animal health workers include:

- veterinary surgeon (4-5 year BSc)
- veterinary assistant (2 year Diploma)
- animal health technician (6 month course)
- para-vet, vaccinator (a few weeks short course)

Administratively, Eritrea is divided into 6 zones and 55 subzones which further comprises the villages. At zonal level there is a livestock centre staffed with a veterinarian and also including animal production expert and meat inspector. The veterinary assistants will be located at subzonal level. Their tasks and responsibilities are described in the job description (Annex 7) and include treatment, vaccinations and advisory service regarding animal health issues. Record keeping of diagnoses and funds received are important parts of their work. The animal health technicians are supposed to assist at both zonal and sub zonal levels. In the villages, carefully selected persons are trained as para-vets and given responsibility regarding animal health issues.

The present manpower allocation in Eritrea is clearly inadequate and does not meet the minimum requirement. According to ARD the gap concerns especially medium level trained manpower. Manpower development that can service the livestock sub-sector is therefore considered as the most critical issue in the short term period.

The Government of Eritrea (GoE) has recently given substantial incentives to employees working at regional and district levels and doubled the salary and offered allowances and compensation for those working in hardship areas of the country.

3 PROJECT DESCRIPTION

3.1 Objectives and goals

The goal of the VATP is to improve animal husbandry in Eritrea by manpower development and upgrading staff in the MoA. Objectives are further detailed in the document "Diploma programme for veterinary assistants" (Annex 8). Graduation of the first batch of 25 students is foreseen in the autumn 1998.

3.2 Expected output and results

The expected output of the programme is VA with a general knowledge of livestock production in Eritrea and special competence and skills in animal health issues at diploma level. When allocated to the sub-zonal livestock centres their work should contribute to improved animal health and thereby have an impact on livestock production.

The project also includes establishment of a training centre and thus construction of buildings, supply of teaching material, equipment etc.

3.3 Partners and inputs

The Development Fund (DF) is the implementing partner on the Norwegian side. DF is a non governmental organisation founded in 1978. It works primarely with rural community development in a number of countries giving priority to food security, agriculture and sustainable management of natural resources. DF receives financial support from NORAD. DF has been working in Eritrea since 1983-84 and accumulated a great deal of experience and knowledge about the country, its people and culture. The entire input to the VATP has come from NORAD through DF and was NOK 706.667.- (including overhead and administrative costs to DF) in 1996.

MoA is the implementing partner on the Eritrean side having economic and administrative responsibility for the project.

Noragric is a Centre at the Agricultural University of Norway (AUN) with special competence in the fields of sustainable agriculture and management of natural resources. The Centre has extensive collaboration with several countries in sub-Saharan Africa and Asia. Noragric provides professional back-up to NGOs running projects in the SSE programme.

3.4 Activities

The main activities of the VATP are the following:

- construction of buildings comprising the Centre
- supply of equipment, teaching material etc
- development of a diploma programme for veterinary assistants
- enrollment of students and implementation of the diploma programme
- employment of Staff necessary to run the Centre according to plans

4 METHODOLOGY OF THE REVIEW MISSION

A programme (Annex 2) was agreed upon with the MoA enabling the review team to collect relevant information in order to cover the issues described in the ToR. This included the following:

- discussion with key persons in the MoA, at the Centre, and at College of Agriculture andAquatic Sciences (CoAaAS (Annex 3)
- tour of the Central Veterinary Laboratory and of the Training Centre
- field visit to the zonal livestock centre in Mendefera

Prior to the travel the review team had discussions with the key responsible for the project at DF. Relevant documents were consulted (Annex 9).

5 MAJOR FINDINGS

5.1 Overall view of the project implementation

5.1.1 Training facilities

The Centre is located close to the neighbouring institutions Animal Resource Department (ARD) and Central Veterinary Labaopratory (CVL) in Asmara and it comprises the following buildings:

- administration building including the library
- classroom building (4 rooms of 30 seats)
dormatory (accomodation of approx. 100) including kitchen and restaurant
- toilet building

The Centre has purchased equipment for administrative purposes and teaching material. Books and reference materials are not available in adequate quantity or quality although provisions are made for the project. The authorities have indicated that purchases would be made this summer in consultation with the Debre Zeit Faculty of Veterinary Medicine in Ethiopia. This year students got only handouts distributed by the instructor. They may leave the Centre with only their own lecture notes and handouts as primary source of written knowledge base for the challenges they would face in the field. It would be very good if students are supplied with standard manuals that could be used in the field.

No laboratory for training of students has been constructed at the campus. However, the Centre benefits from its proximity to the CVL and uses facilities as the clinics and autopsy room. A laboratory at CVL for teaching of groups has also been equipped by VATP in order to meet the needs in the 2nd year courses.

The library has limited space for books and is at the same time a reading room. Computer equipment has not yet been introduced and the photocopy machine is manual.

Construction of a building for leisure time activities is planned and budgeted for by the Centre's administration.

Use of the premises at the Centre to run short courses and workshops/seminars in various other fields of agriculture is considered important. In 1995 four short courses (30 days) were conducted to upgrade MoA staff in the fields of:

- Animal production and health
- Forestry, soil and water conservation
- Crop production and protection

- Marketing and credit

According to a list prepared by MoA a summary is given over courses conducted during the last years.

Reviewers comments
The training facilities seem appropriate to the purpose of the Centre. A laboratory for teaching should be given priority rather than the construction of a building for leisure time activities. In order to meet the need for an appropriate teaching laboratory, one of the classrooms might be reconstructed for this purpose. The students should be provided with a «package» of key material during the diploma course especially with regard to booklets, handouts, regulations and guidelines. As to the use of the Centre, the facilities can accomodate short courses conducted in parallel to the VA diploma course. This is done to a certain extent, however, there seems to be room for improvement. A semester based plan for the use of the premises (short courses, seminars, meetings etc) should be prepared in order to limit periods of free capacity to a minimum.

5.1.2 Curriculum

The curriculum of the VATP (Annex 8) has been prepared after consulting similar medium level training in other African countries, especially Debre Zeit, Ethiopia. Staff at the MoA and UoA has equally been involved in the preparation of the curriculum.

The subjects taught in the first year are introductory and provide relevant basic knowledge to the animal health part of the diploma course. The 2nd year is entirely dedicated to specific animal health subjects of importance for workers in this field of livestock production. In the curriculum, practicals are given attention in both the laboratory and clinical disciplines. Students are expected to get more of the practicals during the second year of study.

The VATP gives a postsecondary education and as such it should be accreditated by a relevant authority. This has not yet been done although there are plans to approach the relevant bodies (Ministry of Education/UoA) and secure the necessary accreditation.

Reviewers comments
No written material apart from the overview given in the document describing the Diploma programme (Annex 8), was presented to the team. Thus, the content of the subjects taught has not been emphasised in detail, but is assumed to be basic and relevant giving key information to the students. Practicals are considered especially important providing the students with hands-on experience. In this respect, collaboration with ARD is of utmost importance and there is a well functioning relationship between the two institutions.

The curriculum must be considered according to future job tasks and responsibilities of VA. The VA will be located at sub zonal level. A job description has been prepared in Tigrigna and the translation is attached as Annex 7. According to the people met, the curriculum corresponds well with future working tasks. This is also the opinion of the review team.

An initiative should be taken to obtain accreditation of the Diploma course and thereby assuring quality of the programme. This step should most probably involve UoA.

5.1.3 Staff and teaching resources

Seven staff members are employed on full time basis all of them in the field of animal/crop science. In order to cover subjects taught the 1st year instructors have been recruited on part time basis from the UoA (80% of all the teaching) and paid for by the project. An Agreement exists between MoA and UoA. This arrangment seems reasonable.

In order to give lectures and practicals in the various subjects of veterinary medicine, three instructors from ARD will be involved one of whom will coordinate this part of the programme. This task will add to their duties in their main positions. It is fortunate that the Centre is located close to ARD thereby facilitating collaboration. However, due to human resource capacity problems in the veterinary field Head of ARD has requested for assistance from DF and from FAO Eritrea (under the TCP/TCDC programme) in the following areas:

- veterinary parasitology
- large animal medicine
- veterinary public health
- veterinary microbiology
- veterinary pharmacology

So far there has been a negative response from veterinary institutions in Norway and FAO has not yet answered. Recruitment of instructors from other countries will obviously require a budgetary increase. Lack of instructors with relevant experience is of major concern. The semester will start October 1st this year.

Reviewers comments

The need for instructors in the areas of veterinary medicine mentioned above is acute and must find a solution within beginning of September. The Team proposes to address this issue to Debre Zeit, Ethiopia, and to reexamine possibilities to involve one (or two) persons from Norwegian institutions. For obvious reasons recruitment from neighbouring countries should be given first priority. Kabete, Kenya, should also be considered in this respect. Thus,

a short term solution must be found. In the long run, a more sustainable solution should rely on Eritrean staff.

The budgetary consequences must be estimated and communicated to DF and/or other funding agencies. Use of instructors from outside Eritrea may require revision of semester plans and block teaching is proposed.

Subsequently, a visit was made by Ato Tekle Alemseged of VATP and Dr. Aregay to the Faculty of Veterinary Medicine in Debre Zeit to explore the possibility of getting staff for the second year courses as well as to consult them about textbooks and reference materials. They met with Dr. Mekonnen, the A/Dean and Dr. Fisseha Gebreab, separately. Dr. Mekonnen promised to co-operate but said that specific request had to come from the VATP. Dr. Fisseha, who is the most senior person in the Faculty, assisted the Team in updating the list of books and expressed his willingness to participate in teaching Veterinary parasitology. Two other staff, namely, Dr. Bayileyegn Mola (Vet Public health) and Dr. Jawaro Abdo (Large animal medicine) are also willing to teach. Staff to teach pharmacology is not available at Debre Zeit.

5.1.4 Students

The students to be enrolled in the VATP were selected from MoA staff at regional level. The requirements for admission are described in the outline of the diploma programme for VA. UoA prepared and administered examinations in English and General science. Based on the criteria of selection 25 students were accepted out of 77 applicants. There are 20 male and 5 female students. The different regions of Eritrea are represented, however, this aspect was not included in the selection criteria. The students have already some rural experience and some has attended a six months course in animal husbandry and general agriculture conducted by MoA.

The students are hard working and well motivated. So far their performance have been excellent.

Reviewers comments
The Team fully endorses the procedure for selection of this first batch of students. Some of them have livestock experience and the different regions of Eritrea are represented although this was not among the criteria for selection. Female participation is 20% and considered remarkable at this stage. Future selection should perhaps be more targeted according to livestock regions in Eritrea. Improvement in female participation should also be considered.

5.2 Institutional set-up of the Centre and funding

5.2.1 Organisation

Currently, MoA/ARD has the administrative, economic and professional responsibility of the Centre. However, there is a proposal to transfer the VATP to the Research and human resource development department within MoA. In addition, staff at MoA/ARD indicates that a transfer of the Diploma course to UoA is foreseen in the near future.

Reviewers comments
Stability is a prerequisite in order to benefit from accumulated experience. There is some confusion about the future home base of the VA Diploma course. At the College of Agriculture and Aquatic Sciences, UoA, there is no awareness of transfer. If this is to be the case negotiations should start immediately. However, in the plans of UoA, Veterinary science is foreseen to be included in the period 2000-2005. MoA should take an initiative to settle this question.

If the VA Diploma course will continue under MoA, an agreement should be developed with UoA so that UoA will be responsible for accreditation and thereby preparing the ground for an eventual future transfer.

5.2.2 Funding

Hithereto, funding of the VATP has entirely come from DF. In ToR it is stated that DF is «open for discussions for further funding of the Veterinary Centre after the first batch of students has graduated in autumn 1998». To secure future funding of the VATP and other activities at the Centre, is of major concern for MoA. Steps will be taken from the Eritrean side to approach DF with plans to continue the Diploma course.

Reviewers comments
Discussions between the partners should start during the 2nd semester of 1997 in order to develop a follow-up project for an eventual 2nd phase.
If DF pulls out of the VATP and funding from NORAD ceases, a plan for alternative funding should be developed. In any case, a plan of phasing out of donor support and phasing in of GoE should be prepared paying attention to sustainability of the project. DF should initiate these discussions. At present, all costs are covered for the students during the Diploma course including food and accomodation. A moderate fee may be considered in the future.

5.3 Future prospects of the Programme

5.3.1 Courses

MoA recognizes the need for Staff development and training in several areas. In order to upgrade the professional competence of medium level personnel Diploma courses have been suggested in f.ex.:

- animal production
- crop production
- pest management
- apiculture
- poultry production
- etc

Reviewers comments
According to the strategy plan on Staff development in MoA (Annex 5), there will still be a need for another batch of VA. In view of the shortage of this category of personnel the continuation of VATP is recommended at least for a 2nd batch of graduates. Thereafter, other training programmes can be considered. However, if MoA decides also to give priority to other areas, the premises do allow handling of two courses in parallel. Budgetary consequences, staff capacity etc, must of course then be considered carefully.

5.3.2 Economic responsibility

Money allocated to the project is transferred each semester to a project account at MoA. The Centre gets money upon request and according to budget. The Centre is responsible for accounting. Account reports are produced annually and submitted to the Internal auditor in MoA. Further, an External auditor may be considered before the Finance office at MoA accepts the accounting report.

MoA is responsible for budgeting. A detailed budget has been prepared for 1997. A revised budget is required including the costs related to expatriate instructors. Additional funding has been applied for through DF (NOK 500.000.-) as well as the FAO Eritrea office. A budget proposal has been prepared for 1998 and also for enrollment of a 2nd batch of students for the period 1998-2000.

Reviewers comments
MoA has the economic responsibility of the VATP. The routines seem adequate. Accounting reports were not presented to the Team. This issue was not considered to be part of the Reviewers work, ref. ToR. The budget proposals for 1998 and further, should be communicated rather quickly to DF for consideration and discussion.

5.3.3 *Collaboration with Norwegian institutions*

In the planning of the VATP a contribution of teaching resources from the Norwegian College of Veterinary Medicine (NCVM) was expected. However, for several reasons the NCVM was not able to provide instructors to the programme.

From the Eritrean side there is still an interest in establishing collaboration with NCVM. In general, links with institutions in other countries are considered an asset to programmes operating in the field of agriculture in Eritrea.

Reviewers comments
The Team suggests to reexamine possibilities for co-operation with NCVM. An initiative should be taken and the Team suggests to inform NCVM by giving it a copy of this report and further to call for a meeting in September when a representative from the MoA will attend the centennial anniversary at AUN.

6 ROLE AND FOLLOW-UP OF DF

DF is the responsible partner on the Norwegian side. One officer is handling all matters related to VATP. Regular on-site visits (3-4 times per year) and frequent correspondence between the parties seems adequate. Questions of importance for the project has been handled in a professional way. DF follow-up concentrates on financial matters and the overall implementation of the VATP. DF reports to NORAD.

7 CONCLUSIONS AND RECOMMENDATIONS

In conclusion, the VATP presents itself as a well established project which has been implemented according to plans although the start-up was slow. As responsible partner on the Eritrean side, the MoA has fulfilled its partnership commitments by providing administrative services and instructors from its Staff. People involved in the VATP have relevant competence, both administrative and professional, thereby assuring proper running.

A training centre has been built and the facilities seem appropriate. A Diploma course for VA has been developed and the curriculum is relevant as to future job tasks. The first batch of students has been enrolled and the Team endorses fully the selection procedure. An agreement has been made between MoA and UoA regarding part time recruitment of instructors and teaching staff. ARD also contributes to teaching as well as staff employed by the Centre. Although most of the teaching has been provided by external teachers, the first year of the Diploma course has run smoothly without major problems. However, for the 2nd year of teaching, the Centre faces a rather critical problem of teachers/instructors in the various subjects of veterinary medicine. This issue must be given top priority. It is suggested to recruit

instructors from neighbouring countries and reexamine possibilities to involve a teacher from NCVM in Norway. This necessitates renewed urgent requests for additional funding for 1997 and 1998. A revised budget should be developed. There will also be a need to revise the teaching plan so that the subjects are taught in blocks rather than to be spread out during the whole semester.

MoA is responsible for the VATP. It is suggested to transfer the Diploma course to UoA and thus also obtain accreditation. An initiative should be taken in order to start this process.

The VATP is part of a staff development programme within MoA. The Team fully supports the priority given by the authorities to upgrade staff at regional level. As experience has been obtained with the first batch of VA students, it is suggested to extend the programme for another two years and run the Diploma course for VA rather than to establish a course in another field. In order to fully exploit the facilities at the Training centre, short courses, seminars and meetings should be planned for each semester.

Future projects focusing on livestock related activities, i.e. animal health and production, at sub-zonal and village level, should be considered.

Annex 1

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Review of the Veterinary Project in Eritrea, implemented by the Development Fund and funded through SSE-Programme
Terms of Reference

1. Background - project objectives

The project started in 1992 and comprised the construction, equipment and support of a Veterinary Assistant Training Centre where one would educate Veterinary Assistants in a two-year course. The need for veterinary knowledge and competence in the rural areas of Eritrea are substantial and as such the project was considered to be suitable for SSE-funding.

The project suffered from a slow start-up primarily due to it's institutional set-up not being clarified. As such there were discussions between the University of Asmara and the Ministry of Agriculture about who should have the professional and organisational responsibility for the Centre.

In 1995 it was however clarified that the Ministry of Agriculture should have the economic and administrative responsibility for the Centre. It was also decided that it should educate a two-year diploma and the first batch of students (25 students) started their courses during autumn 1996. The admission tests are organised in collaboration with the University of Asmara, while students have been recruited from the Regional Agricultural Administration. Teachers have been recruited from both the Central Agricultural Administration and the University of Asmara. The first batch of graduates will finish in the Spring 1998.

The Centre originally was to be only for education of Veterinary Assistants, however the scope was later expanded to also include courses in other subjects such as natural resource management. This is why in 1995, before the veterinary assistant training started, NORAD through the Development Fund, financed in-service training in natural resource management for MOA staff. The Development Fund has decided, however, to concentrate its efforts on the veterinary side, and has since 1995 only financed the Veterinary Assistant courses.

The Development Fund has initially stated that they would only finance the project until the first graduates where finished in 1998. Regarding potential follow-up of the project after 1998, there has been some discussion whether the Veterinary College of Norway could play a role in contributing with teaching skills and/or other support to the continuation of the project.

2. Need for project review

The Development Fund is open for discussions for further funding of the Veterinary Centre after the first batch of students have graduated in autumn 1998. Noragric has never reviewed the project and would like to get an overview of the project scope and progress in the field.

An important objective of the mission would also be to review whether there will be any follow-up required and to assess the instutional set-up and capacity for taking over the administrative costs of the courses, which up to now have been covered by the SSE-Programme.

Finally the potential for future collaboration between Norwegian and Eritrean institutions in the area of veterinary and animal husbandry training should be examined.

3. Methodology of review

The methodology will be reviewing existing reports and meetings with officials in the Ministry of Agriculture, the Veterinary Centre and the University of Asmara.

4. Issues to be covered

The team should during its review :

Obtain an overall view of the progress of the project.

This should include a review of the implementation of the first year of active teaching, covering :

- structure of veterinary services in Eritrea, their links with other agricultural services and their grassroot contact
- criteria and procedures for selection of students,
- regional distribution of students
- teaching resources,
- types of positions the graduates would be offered
- the curriculum in relation to the types of positions the veterinary assistants will fill
- utilisation of facilities and equipment

Review of the Institutional set-up and its sustainability including :

- organisational set-up of the Centre, which institution(s) has professional, administrative and economic responsibility
- does the Centre get additional funds from other sources than the SSE-Programme

Future perspectives.

- the launching of new types of courses at the Centre
- capacity to take over the full economic responsibility for the running of the courses
- potential future collaboration with Norwegian institutions
- how to create strong links with the local levels of agricultural services

5. Team

The team will comprise Mr. Arve Lund (Mission leader) and Dr. Aragay Waktola.

6. Timing of mission and deadline for reporting

The team will be in Asmara from 24th to the 28th of June (four full working days).
Before departure the team will give a debriefing of their main conclusions and findings.

Attached is a set-up for a programme for the team during its visit in Eritrea. The feasibility and practicalities around the visit will be discussed with Mr. Gebrechristos at arrival.

A short report will be produced before the end of August 1997.

Sincerely Yours

Sidsel Grimstad
SSE-Coordinator

Copy : Gebrechristos Mesmer, Head of Admin. Dept., the Ministry of Agriculture, Eritrea
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Annex 2

PROGRAMME

June 24. Arrival Asmara
Meeting with Mr. Ghebrechristos Mesmer, Head of Administration, Ministry of Agriculture (MoA)
Meeting with Mr. Niels Jørgen Winge, Technical adviser, DANIDA

25. Meeting with Dr. Andom Ghebretensai, Head of Animal Resource Department, MoA and Dr. Uqubeab Ghebremichel, Head of Animal Health Division
Tour of Central Veterinary Laboratory
Field visit to regional livestock centre in Mendefera and meeting with Head of centre Dr. Oukba-ezgy

26. Meeting with Mr. Tsegay, Director of Veterinary Assistant Training Centre
Tour of the Centre
Meeting with Dr. Berhane, Dean College of Agriculture and Aquatic Sciences, University of Asmara

27. Preparation of summary report
Meeting with Dr. Arefaine Berhe, Minister of Agriculture
Debriefing meeting at MoA with Mr. Ghebrechristos Mesmer and coworkers

28. Attendance at Graduation ceremony, University of Asmara
Departure Dr. Arve Lund

29. Departure Dr. Aragay Waktola

Annex 3

Persons met during the Review

Ministry of Agriculture

Arefaine Berhe	Minister
Ghebrechristos Mesmer	Head of Administration
Drar Tesfamichael	Administrator
Tsegay Birhanue	Administrator
Dawit Ghiorghis	Planning and Statistics
Niels Jørgen Winge	DANIDA, Dairy Development Project

Animal Resource Department

Andom Ghebretensai	Head of Depatment
Uqubeab Ghebremichel	Head Animal Health Division

Training Centre

Tsegay	Director

Mendefera Livestock Centre

Oukba-ezgy	Head of centre, veterinary surgeon
Habte-ab Mesgina	Animal production expert
Tekie Tewolde Medhin	Meat inspåection expert

College of Agriculture and Aquatic Sciences, University of Asmara

Berhane Kiflewalid	Dean of College

Estimated Livestock Numbers in Eritrea ('000 heads)

Year	Cattle	Goat/Sheep	Camel	Equines
1928	749	1897	79	59
1938	591	1491	68	51
1946	1200	2200	105	83
1965	1300	3200	180	109
1973	2500	5000		
1987 *	957	4837	200	
1987	970	3001		90
1990 **	942	2538		
1991 *	538(?)	1738(?)		
1992	1258	5003(?)	185	268(?)

Sources: * Leeds University Needs Assessment Study 1997 and 1991. ** Ethiopia
1989/90 Animal and Fisheries Resource Development Main Department Plan all other data from MOA. Figures marked with (?) do not appear to be consistent.

Estimated Number of Livestock by Province 1992 ('000 head)

Provinces	Cattle		Sheep	Goats	Camels	Equines	Total TLU	TLU/Rural Household
	Total	of which Oxen						
Hamasien	110	54	90	20	0	71	132	2.3-2.8
Seraye	119	52	60	60	0	43	121	1.3-1.6
Akele Guzai	78	42	123	245	4	67	132	1.6-1.9
Semhar	28	11	40	260	15	14	68	2.1-2.6
Senhit	135	42	100	480	34	31	197	4.5-5.5
Gash Setit	380	51	140	530	21	13	352	7.1-8.6
Barka	343	37	180	1021	56	15	406	7.0-8.5
Sahel	28	14	82	1401	46	7	190	3.3-4.0
Denkel	39	8	35	135	9	7	55	2.8-3.4
Total	1258	311	851	4153	185	268	1652	3.3-4.0

Source: ARD 1993 and Mission Estimates

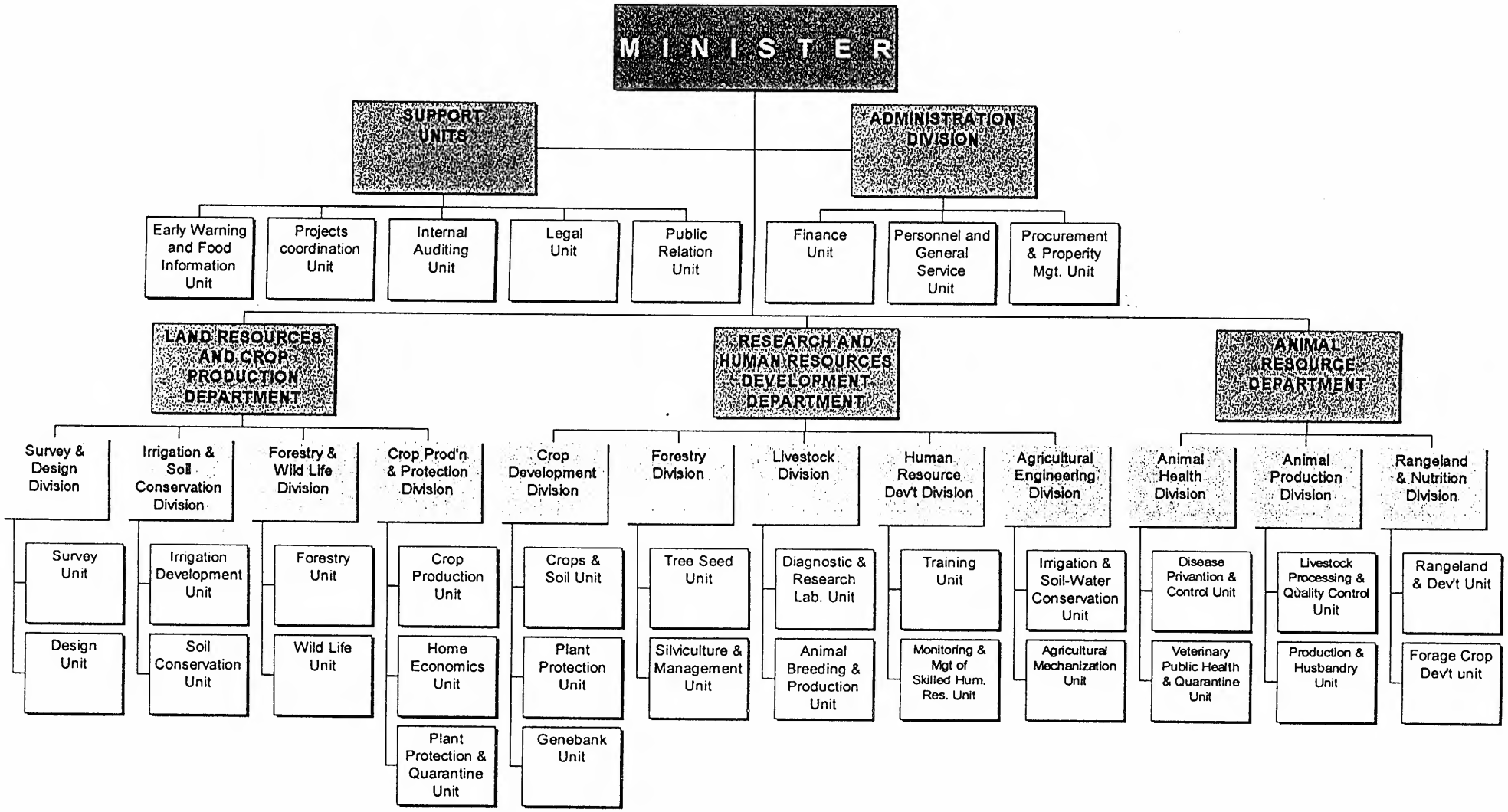
ANIMAL RESOURCES DEPARTMENT
HUMAN RESOURCES DEVELOPMENT 1996-2001

Category	1996	2001	Additional manpower needed by 2001
MSc (BSc + MSc, DVM + MSc)	6	46	40
Veterinarian	19	24	5
BSc (Animal science)	11	16	5
Diploma	51	98	47
Total	87	184	97

Present Manpower of the ARD

Category	Number
Veterinarians *	19
Animal health assistants	18
Animal health technicians	75
Laboratory technicians	2
Assistant laboratory technicians	12
Meat inspectors	5
Assistant meat inspectors	11
Chemist	1
Animal science MSc	3
Animal science BSc	7
Animal science Diploma	23
Animal production technicians	27
AI technicians	3

MINISTRY OF AGRICULTURE
ORGANIZATIONAL STRUCTURE



Annex 6

Annex 7

Animal Health assistant (12+2 years) Job Description

The Animal Health assistant is directly accountable to the head of Veterinary Services in the regions and carries the following duties and response abilities.

1. Participates in the preparation of the annual workplan and budget requirement of his unit (sub-region)

2. Prepares the list of drugs, vaccines and equipment required in the sub-region and after approval by the Head, collects them from the regions.

3. Allocates and distributes Vet supplies to animal health technicians in the sub regions.

4. Undertakes clinical services, vaccinations and surgery in the sub-regional Veterinary Centre.

5. In the event of disease outbreak in the sub-region, he mobilizes a team in a campaign to control and contain the outbreak. He investigates the outbreak and collects samples for submission to the Laboratory.

6. Participate in the training of livestock owners in his area to improve herd health management and feeding.

7. Deals with all technical matters pertaining to animal health in the sub-region, informs and consults with the head of veterinary services in the regions.

8. Supervises the activities of veterinary stations, animal health technicians and community animal health workers in the sub-regions on the implementation of guidelines given by his superior in the regions.

9. In collaboration with the local communities, participates in the select of prospective community animal health workers in the area.

10. Actively participates in the assignment and evaluation of animal health technicians in the sub-region.

11. Prepares and submits the monthly, quarterly, 6 monthly, 9 monthly and annual activity reports of his sub-regions.

12. Actively participates in the assignment and evaluation of animal health technicians in the sub-regions.

Annex 8

THE STATE OF ERITREA MINISTRY OF AGRICULTURE

PROPOSAL FOR THE DIPLOMA PROGRAMME FOR VETERINARY ASSISTANTS

Asmara
December 1995

DIPLOMA PROGRAMME FOR VETERINARY ASSISTANTS

Introduction

Eritrea is located along the south western coast of the Red Sea and covers an area of 124,000 Km^2. The population of Eritrea is estimated at 3.5 million. Its economy has been devastated by a long waged war and constant drought during the past thirty years which also affected agriculture tremendously. Because of this the agricultural output has dropped by 40% and livestock population reduced by 50%. Every endeavour is now being made to develop the agricultural sector including manpower development. In order to develop the manpower, setting up of a veterinary assistants college is envisaged.

Objectives

1. To improve animal husbandry in Eritrea by increasing the productivity and restore the animal stock to a more optimum level through better trained personnel.
2. To improve the staffing of the Eritrean veterinary services, in order to contribute to a more efficient animal health net work.
3. To train other category of para-veterinary personnel.
4. To strengthen diagnostic services on animal disease problems.
5. To improve the extension net work in livestock development.
6. Top fill the gap in medium level trained animal health personnel whose numbers are critically low.

ENROLLMENT

- With the facilities at its disposal the institute has an enrollment capacity of 25-30 students per year.

Requirement for Admission

Students will be admitted to the Animal health assistants school on the basis of:-

1. Getting a pass in the secondary school leaving certificate, including passes in general science and English.

2. Getting a passing mark in written and oral examinations prepared by the Ministry of Agriculture.

3. Acceptance at an interview; other entrance qualifications are timely accepted and enquiries regarding these should be made by the Ministry of Agriculture or other higher Educational Department.

4. Mentally and physically fit.

Curriculum

Students of the school for animal health assistants follow a two year programme of study.

- The first year is devoted to the teaching of basic sciences /Biology and Chemistry/, English, Anatomy, Physiology, Animal husbandry, Animal Nutrition, Introductory Microbiology and Pathology.

- The second year is allotted to the training in the diagnosis, treatment and prevention of the most prevalent infectious, non infectious and parasitic diseases.

- Other areas of focus include food hygiene and meat inspection, techniques in minor surgery, aid in delivery and treatment of common reproductive diseases.

- Teaching will be carried out both by lectures and practical work.

Course Listing

First Year

N°.	Subject Semester I	Credits	Subject Semester II	Credits
1.	English	2	English	2
2.	Biology	3	Biology	-
3.	Chemistry (organic inorganic)	3	Chemistry (organic inorganic)	-
4.	Animal Husbandry	3	Animal Husbandry	-
5.	Anatomy and Physiology	4	Anatomy and Physiology	4
6.	Animal Nutrition	-	Animal Nutrition	3
7.	Introduction Microbiology I	-	Introduction Microbiology I	4
8.	Pathology	-	Pathology	4
9.	History of Eritrea	1	History of Eritrea	1
10.	Geography of Eritrea	1	Geography of Eritrea	1
11.	Physical Education	P/F	Physical Education	P/F
	Total	17	Total	20

Break down Based on Number of Hours for each Course

First Year

First Semester

N°.	Subject	Theory	Practical
1.	English	60 hours	-
2.	Biology	60 hours	20 hours
3.	Chemistry	60 hours	20 hours
4.	Animal Husbandry	60 hours	30 hours
5.	Anatomy and Physiology	80 hours	40 hours
6.	History of Eritrea		
7.	Geography of Eritrea		
8.	Physical Education	P/F	-
	Total Hours		140

Second Year

No.	1 st Semester Subjects	Credits	2nd Semester Subjects	Credits
1.	Vet. parasitology	3	Vet. parasitology	3
2.	Animal Diseases I	3	Animal Diseases I	3
3.	Veterinary Clinics	4	Veterinary Clinics	3
4.	Basic Vet Pharmacology	-	Basic Vet Pharmacology	3
5.	Animal Diseases II	2	Animal Diseases II	2
6.	Veterinary Public Health	-	Veterinary Public Health	3
7.	Vet. Microbiology II	2	Vet. Microbiology II	-
8.	Surgery	2	Surgery	
9.	Senior Paper Presentation	-	Senior Paper Presentation	1
	Total	17		18

Breakdown based on Number of hours for each course

Second Year

Semester I

No.	Subject 1st Semester	Theory	Practical
1.	Parasitology	60	30
2.	Animal Diseases I	60	20
3.	Veterinary clinics	40	20
4.	Animal disease II		
5.	Microbiology II	40	20
6.	Surgery	40	40
7.	Laboratory Technology	20	20
	Total	260	150

* Humbulabery
Farm visits

Second Year

Semester II

No.	Subject 2nd Semester	Theory	Practical
1.	Vet. Parasitology	60	30
2.	Animal Diseases I	60	20
3.	Veterinary Clinics	20	40
4.	Pharmacology	40	40
5.	Animal Diseases II	40	20
6.	Vet. Public Health	40	20
7.	Senior Paper Presentation	-	-
	Total	260	170

Objectives and Course Description of Each Subject

I. English

General Objectives

1. To improve the students capabilities in understanding the lectures of the vet. assistants course.

2. To enable the students to write reports in English of an acceptable standard.

3. To increase their ability to understand scientific literature during and after the training programme.

4. To improve their oral communication skills so that they can adequately discuss and describe their work with relevant experts and institutions.

Specific Written Skills

Report writing
Summarizing
Presentation of information in non written form
e.g. Graphs, posters, etc.

Specific Reading Skills.

Interpretation of graphs tables and other information understanding of technical reports reading.

Course Description

- Grammar
- Word Building
- Report Writing
- Speaking and Listening
- Discussion and Summaries

II. Biology

Objectives

- To introduce students to applied biology and provide them information on its many facets.
- To give them knowledge of the structural bases of life.
- To give them the knowledge of basic anatomy and physiology of animals.
- To make students know the ability to use biological apparatus accurately.
- To enable students to grasp the interaction between the diseases causing agents and the host animal.

Contents:-

Cell, reproduction ecology, evolution with introduction to zoology and botany. Part of zoology will focus on classification of the animal kingdom, the use and handling of the microscope.

III. Chemistry

Objectives:-

- To make students know more about chemistry in general and agricultural chemistry in particular.
- To give students a knowledge of the nature of substances.
- To give them knowledge of organic chemistry and use chemical apparatus accurately and the dynamics of body fluids.

Contents:-

Introduction to the principles governing atomic structure, bonding, states of matter and chemical equilibrium description facts and theory of organic chemistry and applications to living processes. Introduction to the chemistry and metabolism of carbohydrates, lipids, proteins, nucleic acids, vitamins and enzymes.

IV. Animal Husbandry

Objectives:-

- To give the students an understanding on animal breeding methods.
- To provide the student with sufficient knowledge of modern dairy farming principles.
- To familiarise trainees with the general knowledge about types of sheep, goats and camels.

Contents:-

- A survey of cattle, sheep, goats, equines bee and camel husbandry and development activities in the country.
- Introduction to the principles and techniques of animal production by relating to the fundamental laws governing selection, breeding, feeding and management practices of farm animals.

5. Anatomy and Physiology

Objectives:-

- To acquaint students with the basic anatomy and physiology of domestic animals.
- To introduce study of the general principles of anatomy and physiology
- To make students understand the decisions of systemic Anatomy based on the cell, tissue, organs and systems which are formed.

Contents:-

- Presentation of basic anatomy and physiology of economically significant domestic animals.

- Study of each body system in relation to its gross microscopic, anatomical features and its physiology.

- To emphasize the structural and functional unity of the organism.

- Study of the major variation in structure and functions between the species.

6. Animal Nutrition

Objectives:-

- To aquaint students with the various feed ingredients and their nutritional values.

- To enable them to formulate feed rations according to the function of the various animal classes and species.

- To enable them aquire a good knowledge of range management and feed utilization by livestock.

Contents:-

- Introduction to the science and principles of feeds and feeding of farm animals.

- Study of basic nutrients, feed evaluation, feed classification, ration formulation, feed conservation, forage, pasture management, and feed utilization by livestock and utilization of agricultural by-products for livestock.

7. Introductory Microbiology

Objectives:-

- To make students aware with various disease causing groups of micro-organisms (viruses, bacteria, rickettsia and fungi).

- To make them know the important feature of micro-organisms and manifestations of host parasite interactions.

- To make students understand the methods in isolation, characterization, preservation etc.

Contents

- Introduction to the principal properties /morphology, culture, physiology/ of micro-organisms including bacteria, mycoplasma, rickettsia, fungi and viruses that are pathogenic to farm animals, agents of diseases and emphasize the mechanisms of pathogenesis. Importance of micro-organisms as causative agents will also be studied.

- Laboratory introduction to the commonly used techniques in the diagnosis of infectious agents.

- Familiarization with physical, chemical and biological agents against micro-organisms.

8. Introductory Pathology

Objectives

- To have a good knowledge on general pathological lessons, the process of pathogenesis so as to understand the special pathology and specific diseases of Virus, Rickettsial, Bacterial concerning their symptoms, post-mortem examination, diagnosis, treatment and presentation of those diseases which are found in the tropics and sub-tropics.

Contents:-

- Cell, tissue, organ and systemic reactions to acute and chronic injuries related to infections, circulatory disturbances, intoxication and metabolic disorders.

- Interpretations of gross pathologic changes by integrating host agent reactions commonly encountered and prevalent infections as parasitic diseases.

9. History

Objectives

1. To enable students to know the, culture, language, and religions of the country.

2. To enable them know the history of Eritrea.

10. Geography

Objectives

1. To aquatint students with the geographical background of Eritrea.

2. To familirize students with the agro-ecological zones in relation to agricultural potential of the country.

3. To make the students know the potential economic resources of the country.

Second year Courses

I. Infectious and - Non Infectious Diseases

Objectives:-

- To enable students detect disease conditious by means of senses, sight, touch, hearing and smell. Based on the knowledge of anatomy, physiology and animal behaviour.

- To familiarize students with the various infectious and non-infectious diseases and equip them with the knowledge of treating them.

Contents:-

- Study of the etiology, pathogenesis, clinical signs, lesions, diagnosis, treatment prevention and control of infectious diseases.

- Emphasize sampling of infectious material and use of micro-organism in the production of antibodies and vaccines.

- Diseases affecting different systems.

2. Parasitology

Objectives:-

- To give students the basic concept on parasitology regarding the principles of parasitism terminology and classification.

- To make students aware of how parasites affect host and enable them to know the specific tropical and sub-tropical parasites including their treatment and prevention. /Protozoa, Arthropods, Helminths/

Contents:-

- Major parasitic helminths, the economic significance in domestic animals.
- Morphology and life cycle, of the parasite pathological manifestation, diagnosis, treatment, prevention control of the prevention of parasitic diseases.
- The major parasitic arthropod and protozoa of economic significance in domestic animals.

Facilitera fel planering av farm clinic

3. Clinical Diagnosis and Experience

Objectives:-

- To study the methods of restraint and handling of domestic animals.
- To know the study of veterinary clinical procedure.
- To enable the students to aquire general and specific clinical examination and sample collection of diseases.

Contents:-

- Methods of restraint and handling of domestic animals.
- Study of veterinary clinical diagnostic procedure, history taking.
- General and specifical examination and sample collection from affected and dead animals.

4. Basic Pharmacology

Objectives:-

- To introduce students to the study of the general principles of pharmacology. /Drugs/ Administration and their effect on the structure and metabolism of tissues.

Contents:-

- A short introduction to the general principles of pharmacology.
- Familiarization, with emphasis on handling clinical application of currently used drugs and vaccines in veterinary medicine.

5. Laboratory Technology

Objective:-

- To aquatint student to the basic concepts of sample selection, collection and processing laboratory methodology and laboratory equipment manipulation.

Contents:-

- Study of the application of basic laboratory techniques with the intention of recovering disease causing agents from clinical materials.

- Emphasis will be places upon sample collection methodology and laboratory equipment manipulation.

- Laboratory practicals include haematology, parasitology, microbiology, urine analysis, demonstration of some histopathological sections.

6. Clinical Studies

Objectives:-

- To give students a general knowledge on reproduction of farm animals.
- To make students aware of prognosis, obstetrics and reproductive diseases .
- To give them a knowledge of aid in delivery and artificial insemination techniques.

Contents:-

- A brief introduction to reproduction physiology in farm animals.
- Pregnancy diagnosis, obstetrics and reproduction, aid in delivery and artificial insemination techniques.

7. Surgery

Objective:-

- To enable students do sterilization of surgical instrument and operating field.
- To give them a knowledge of local and general anaesthesia and enable them to do surgical care of different diseases.

Contents:-

- Prevention of infection
- General anaesthesia in animal Narcotics
- Local Anaesthesia
- Techniques in minor surgery.

8. Meat Hygiene and Veterinary Public Health

Objectives:-

- To give students general knowledge of food hygiene and meat inspection.
- To aquaint students with the construction and management of rural slaughter houses.
- To make students understand the processing and marketing of meat and by-products under tropical condition.

Contents:-

- A study of the methods of examination of food substances of animal origin as to their wholesomeness for human consumption.

- Emphasize antemortem and post-mortem procedure in meat inspection, hygienic methods during slaughtering, transport, processing and marketting of meat and by products under tropical conditions.

- Construction and management of rural slaughter house and introduction to zoonotic diseases prevailing in the country.

The Grade-Point Average (GPA) System

Each subject is given a credit factor which normally is the number of hour-long class-room lessons per week. One credit factor is also assigned for every two hours of intensive laboratory classes per work, or every three hours per week of field practical classes.

Students performance is measured by means of grades and each grade is given a score.

Aggregate Marks	Grade	Definition	Score
85 and above	A	Excellent; outstanding	4
75-84	B	Very good; above average	3
65-74	C	Reasonably good; average	2
50-64	D	Marginal; unsatisfactory	1
0-50	F	Fail	

In each subject, the score corresponding to the grade obtained is multiplied by the credit factor to give the point in that subject. In order to obtain a measure of overall performance, the points for all subjects are added together and divided by the sum of the credit factors.

Final Examination paper will cover the work of the two-year programme. The minimum GPA required to pass any examination is 2.00/C average/. Any student who has a cumulative GPA of less than 2.00 fails. Final Examination papers will cover the work of the two years programme.

REQUIREMENTS FOR GRADUATION

1. A cumulative grade point average of 2: or above.
2. A "D" or above in all graded courses.
3. A total credit hour of 100.

Attitude And Conduct

A student whose attitude, action or conduct are of a type which discredit himself, will be subject to dismissal from the school of veterinary assistants.

CLASS ATTENDANCE

- Regular attendance of class, laboratories, field works, is a students obligation.

- Any student who has more than 3 consecutive of days absence will be dismissed from the school.

References

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3. Syllabus for secondary level by comm, of Agriculture in 1988.

4. Addis Ababa University Faculty of Veterinary Medicine Diploma Programme 1987-1988.

Annex 9

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- Veterinary Assistants Training Programme 1996 Report, Ministry of Agriculture, Eritrea

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- Proposal for the Diploma Programme for Veterinary Assistants, 1995, Ministry of Agriculture, Eritrea

- Livestock. In: Eritrea. Agricultural Sector Review and Project Identification, FAO report, 1994, vol III, Annex 10, pp 1-18

- Background to the Eritrean Dairy Industry.
  Veterinary Issues
  Veterinary
  In: Dairy Development Project - Eritrea, DANIDA report 1996, Part I, pp 1-6, 19-20 and 30-31

- Country Profile Eritrea. In; EIU country Profile 1996-97 Eritrea, Somalia, Djibouti, 1997, pp 3-21

- Country report 1st quarter 1997 Eritrea. In; EIU Country report 1st quarter 1997 Ethiopia, Eritrea, Somalia, Djibouti, 1997, pp 23-34

- several documents provided by the Training centre:

  - lecturers from University of Asmara in semester I and II
  - summary of domestic and external training of ministry staff 1993-30/5 1997
  - results of the examinations in English and General Science prepared and administrated by University of Asmara in the selection procedure of candidates
  - student record semester I 1996 - -97, results in different subjects
  - letter to FAO representative in Eritrea, subject: Animal health training programme in Eritrea