Equator : informatieblad over veterinaire aspecten van ontwikkelingssamenwerking

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January, 1995

from the editor

In this first issue of EQUATOR in 1995 we like to ask your attention for two events that took place in the last few months. The Faculty of Veterinary Medicine organized the 5th international symposium on "Tropical Animal Health and Production" on 30 September, 1994 in Utrecht and on 13 January, 1995 a symposium entitled "A Research Approach to Livestock Production from a Systems Perspective" was organized at the Wageningen Agricultural University as a farewell to Prof. Dr. Dick Zwart on the occasion of his retirement as Professor in Tropical Animal Husbandry.

Two papers presented at the Symposium in Utrecht, one by Prof. D. Zwart and one by Dr. R. Geiger of the International Atomic Energy Agency, pointed out matters of general interest to our readers and we therefore reserved place for the abstracts in this issue of EQUATOR.

For those who are wondering about the future of the "Chair" and "Department of Tropical Animal Husbandry" at Wageningen Agricultural University, there was also some news on the 13th of January in Wageningen. Due to financial constraints and as a result of recent views on agriculture, the Department of Tropical Animal Husbandry ceased to exist as a separate unit some time ago. A new "Department of Animal Production Systems" and a new Chair (with the same name) held by Prof. Dr. Ir. Herman van Keulen, were recently established. This department will have the task to provide education and perform research on animal production systems in the various climatical zones, including the tropics.

During the Symposium Dr. Ir. Henk Udo highlighted the new teaching programme of the department. Students who are interested in the tropics can do their major subject in Animal production systems and opt for a differentiation on production systems of the tropics.
During his farewell speech Prof. Zwart expressed himself on the future of the department as follows: "Hopefully this collaboration (with institutes in and outside the Netherlands *editor*) will intensify in the future to the extent that one professor can be appointed in Tropical Animal Husbandry (at Wageningen)/Tropical Animal Health (at Utrecht), but now with his/her base outside the Netherlands (in the tropics *editor*). Certainly the ground for such an arrangement has already been laid in Wageningen. Apart from this I am confident about the future of the new Department of Animal Production Systems and the education and research on animal husbandry outside the Netherlands".

One must seriously hope that the suggestion from Wageningen to intensify the collaboration between the universities of Wageningen and Utrecht in the field of livestock production and health in the tropics is a gesture that does not remain unanswered. At this time of severe cuts in the budgets of the universities, collaboration is the only way to guarantee that in the coming years sufficient expertise will be available to educate veterinarians and livestock specialists for duties in the tropics.

THE RULES OF THE GAME

Wageningen Agricultural University bade farewell to Professor D. Zwart

On Friday 13 January 1995 the Wageningen Agricultural University's section of Animal Production Systems organized a symposium and a panel discussion on the occasion of the retirement of Dr. Dick Zwart as professor in tropical animal husbandry. During the symposium results of current research performed by staff of the section were presented to an international audience. Later that day professor Zwart gave his farewell address under the title: "What are the rules of the game?"

The rules of the game

Professor Zwart started his career 40 years ago (see EQUATOR vol. 4, July and September, 1992) as the veterinary expert in Dutch New Guinea. He spent almost one third of his career in tropical countries. He had to overcome several critical stages during his long active life, but fortunately he was always surrounded by friends who supported him with good advice. One of his African friends taught him the golden rule: "Always make sure that you know the rules of the game". This sounded easy but Prof. Zwart soon found out that the rules of the game tend to change in the course of time, often before the end of the previous game. Visions on future developments also originate from certain rules. In his farewell address Professor Zwart looked back not only to evaluate the views of his predecessors but also the achievements of the section of Tropical Animal Husbandry. Whereby the general question remained: "What were the rules of the game?". Because in his view tropical animal husbandry is inextricably bound up with tropical animal health, he also reviewed the inaugural lectures of his predecessors at the Faculty of Veterinary Medicine of Utrecht University.

Nutrition

Hoekstra (1950, 1963) and Bakker (1982) considered feed to be the major limiting factor in cattle production in the tropics. In 1967 Professor Zwart himself pointed out that it is useless to vaccinate cattle that will die later on because of a lack of fodder. He briefly described the research findings of the Wageningen staff on this subject. From all the research efforts of the past years one fascinating question emerged, namely: "How is the feed intake regulated?". Ketelaars and Tolkamp formulated in 1991 the hypothesis that "optimization of the use of oxygen could play a key role". The first requirement to test this hypothesis should be that a games master teaches the players in this research, e.g. cell biologists, physiologists, fodder experts, their place in and the rules of the game.

Genetical diversity

Already in 1950 Hoekstra argued strongly for the conservation of indigenous breeds of ruminants. Today the loss of valuable genetical material is still a major concern. Indigenous breeds can be superior in different qualities, like heat resistance, disease resistance and fertility. These qualities are essential in an environment where it is difficult to survive. Man is able to control or influence aspects of the environment. Despite this ability, there is a worldwide urging to limit the use of vaccines and veterinary drugs. More and more the genetic capacity of animals to resist infection is exploited.

A lot of research on trypanotolerance of N'Dama cattle has been done. Wageningen's Tropical Animal Husbandry section used the West African dwarf goat as a model. Their hypothesis was that fodder intake of these goats is linked to the genetic ability to control certain a-specific products of the immune system, in this case the Tumour Necrosis Factor (TNF). Animals that are able to limit their TNF production can maintain the level of fodder intake better and so have a better chance to survive. Professor Zwart is of the opinion that in the near future more of this type of connections will be found. However, these efforts can only succeed in close cooperation with research institutes in Africa.

Economical and technical aspects

To professor Zwart it is a dilemma whether socio-economical aspects of cattle breeding should prevail when it comes to the need to increase production. On the one hand one should not disturb the existing stable social and cultural relations in a community, but on the other hand if Africa wants to supply its growing population with products of animal origin, the production methods must be intensified. An isolated self-supporting rural community is something of the past.

Concerning the future of livestock production in the tropics professor Zwart stated that the demand for products of animal origin will increase and that around the bigger cities more or less intensive cattle production systems will develop. The emphasis will be on integrated crop-livestock systems, in Africa as well as in Asia. Nomadic cattle breeding will deminish. Prof. Zwart hoped that the Sahel project in

Professor Dick Zwart (photo: De Gooijer)

West African dwarf goats are most numerous in Nigeria (photo: Paling)

Burkina Faso can generate the rules of the game for the integration of sustainable arable farming and stock-breeding.
Despite huge research efforts a major breakthrough has not taken place. Animal production per animal health worker went slightly down in the past years. In Subsaharan Africa the production of meat and milk per capita is one of the lowest in the world, despite large investments in cattle breeding projects.

Future perspectives
The challenge for the future will be to develop cattle breeding systems that join in with the needs and restrictions of the small farmers.
The systems approach is very popular nowadays. Researchers consider a farm as a whole, in other words he or she tries to understand how the different components are connected and interact with the people and the environment. In this way a diagnosis of the limiting factors can be made. Prof. Zwart doubted whether this approach can solve all problems, but at least it can contribute by formulating the main problems sustainable livestock production encounters.
Livestock is often regarded as a threat to sustainability, but this is not always correct. One should be careful that the goat beside the corpse is not pointed out the culprit.

Staff and students
Professor Zwart counted himself lucky with his staff, who without exception are experts in building bridges between the different disciplines. He did not know the exact rules of the game here, but in his opinion to be a successful staff member in his team one should have worked at least several years in a foreign country, one should be open to other opinions, one has to be able to solve problems and one should be able to deal with disappointments.
As far as teaching is concerned, it will be absolutely necessary in the future to teach in English, because this will be the only way to have a good interaction between students of different regions. Prof. Zwart warned his students that in the current time there is no need for young generalists. However, despite the fact that sometimes he had some difficulties to keep a high level, he always regarded teaching his students inspiring. It was stimulating to see students return from a traineeship in a tropical country as wiser people.

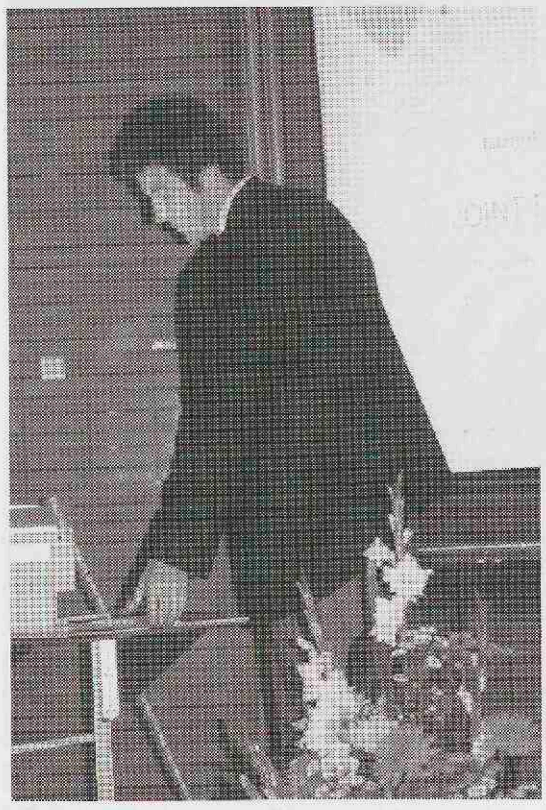
Royal decoration
At the end of the ceremony Dr. M.P.M. Vos, President of the executive board of Wageningen Agricultural University had the privilege to decorate Prof. Dick Zwart in the name of Her Majesty the Queen with the insignia belonging to the rank of Knight of the Order of the Dutch Lion. Visibly moved by this unexpected honour Dick Zwart received the congratulations from his colleagues and friends during the crowded farewell reception that followed the ceremony.

Jean de Gooijer

THE INTRODUCTION AND APPLICATION OF ELISA KITS IN AFRICA[1]

Livestock production in tropical countries is still hampered by outbreaks of the major animal diseases that have been controlled or eradicated for many decades in the temperate zone. Linked with declining animal health services in many Third World countries and poorly or non-existent disease surveillance system and despite large scale control programmes, outbreaks of diseases such as rinderpest and contagious bovine pleuropneumonia (CBPP) continue to occur.

Background
In 1986 the Joint Food and Agriculture Organization (FAO)/International Atomic Energy Agency (IAEA) Division, when re-evaluating the direction of its programme of support in animal health, assessed the diagnostic capabilities of 15 African countries and concluded that many countries were at that time unable to diagnose even the major livestock diseases for a variety of reasons. This situation was occurring despite the fact that most of the countries had had considerable bilateral support in animal disease diagnosis, often from several donors. Such support invariably had involved the introduction of a multitude of diagnostic techniques. Unfortunately many of these techniques were not appropriate for the developing country's situation and relied heavily on continuing outside



Dr. Geiger presented the work of the Joint FAO/IAEA Division at the symposium in Utrecht (photo: De Gooijer)

support and expertise. Consequently, after the withdrawal of the donor support, in many of these countries such techniques were not sustainable and the countries were soon left without a capability to either diagnose or monitor animal diseases.

In an attempt to overcome this problem, a number of criteria were defined for a diagnostic assay that would be suitable for the sort of conditions found in laboratories in developing countries. The test should require a minimum of training and equipment and should be sustainable after these initial inputs had been made. The equipment should be robust and not require an exacting power or water supply. The test should be applicable to a large number of diseases and be definable in terms of its sensitivity and specificity for a particular disease. It should be easily standardized and amenable to internal and external quality control. Finally, the test should be able to process a large number of samples with a low cost per sample. It became clear that one assay technique, the enzyme-linked immunosorbent assay (ELISA) fulfilled all these criteria and support for the introduction and use of this technology in developing countries became the main thrust of the Animal Health Programme of the Joint FAO/IAEA Division.

The FAO/IAEA ELISA kit

Central to this support programme was the concept of supplying the necessary ELISA reagents in a kit providing all the necessary reagents, relatively standardized for the majority of the diseases and containing a detailed protocol. From the outset of the programme it was clear that all the basic equipment necessary to run the test had to be provided and all the reagents apart from the water needed to be contained in the kit.

Each ELISA for a specific disease is developed in cooperation with the leading research institutes for that disease e.g. the rinderpest competitive ELISA was developed by the World Reference Laboratory for rinderpest, Pirbright Laboratories, UK. From where the biological reagents in the kit are still produced. Further developmental work to provide a kit suitable for use in the tropics and capable of dealing with rigorous environmental influences of prolonged travel without any deterioration is carried out at the FAO/IAEA Central Laboratory and Office International des Epizooties (OIE) Collaborating Centre for ELISA and Molecular Techniques in the Diagnosis of Animal Diseases, which itself is a part of IAEA Laboratory Complex in Austria. Here FAO/IAEA ELISA kits are validated, full specificity and sensitivity data are prepared and the assays are presented to OIE for inclusion as a recognized and prescribed test for the disease in question.

To ensure the reliability of the results obtained, each kit contains a full set of internal quality control reagents as recommended by the OIE and in some cases an external quality assurance programme is in operation for that kit. Internal controls are included on each ELISA plate to assure the user that the assay is performing correctly, whereas the external quality control is operated on an annual basis to assure those outside the testing laboratory that the results being produced are valid.

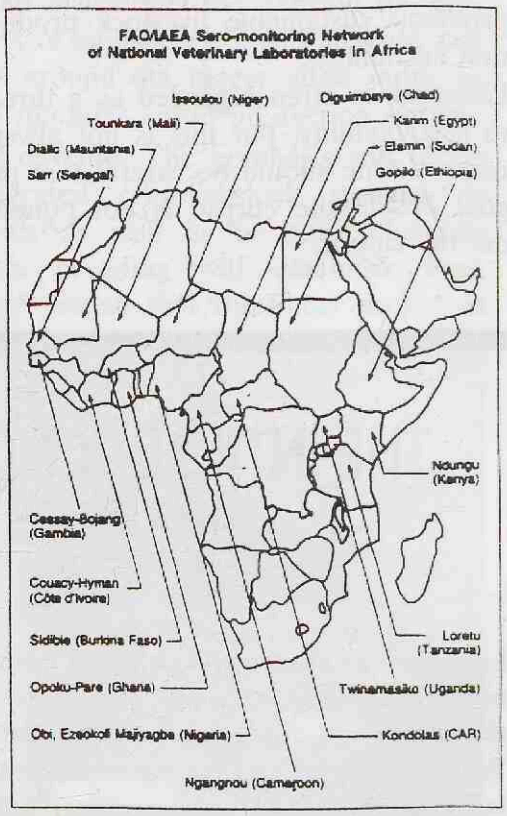
The kits themselves are for the most part, assembled at the FAO/IAEA Central Laboratory and distributed to the end user via the national United Nations Development Programme (UNDP) office.

FAO/IAEA Support Programme

Support for the introduction and use of ELISA technology is provided through an IAEA Technical Cooperation Project (TCP) or an FAO/IAEA Research Contract, itself part of an FAO/IAEA Coordinated Research Programme. An IAEA TCP usually operates from 3 to 5 years and can provide all the essential equipment (ELISA reader, pipettes etc. of approximately US$ 20,000), expert services to introduce and technically backstop the test (2 months of approximately US$ 20,000) and fellowships to provide the training (6 months of approximately US$ 18,000). In many cases a TCP is linked to the award of a Research Contract at a particular laboratory. These Contracts, each worth

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

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



(Source: Animal health: Supporting Africa's campaign against rinderpest, IAEA Bulletin, 3/1994, pp. 48-55)

[1] Paper presented at the 5th Symposium Tropical Animal Health and Production, 30 September, 1994, Utrecht, the Netherlands

Collection of blood samples in the field is the basis for disease diagnosis and control (photo: Paling)

up to US$ 10,000 annually, are awarded as part of an FAO/IAEA Coordinated Research Programme (CRP) under which the work is clearly defined and focused on a particular research topic.

Sustainability of the Programme

Whilst a major consideration in selecting ELISA technology was its long-term sustainability in the developing country situation, it is still necessary to provide essential reagents and some technical backstopping after the termination of a 3 - 5 year national TCP. To achieve this a regional TCP has been established which effectively extends the support provided under a national TCP or through the inclusion in a Coordinated Research Programme. This support although minimal in pure financial terms (US$ 4,000/country/year) is crucial and by providing support for the routine supply of ELISA kits, for some further training and for trouble shooting, has provided a remarkable continuity to our programme for the improvement of animal disease diagnosis and surveillance in Africa.

Use of FAO/IAEA ELISA kits

In providing support to improve disease diagnosis, the aim has not been to merely transfer ELISA technology, but to transfer this technology within the context of control or eradication programmes for the major diseases affecting the livestock in a particular country or region. In providing this diagnostic tool in terms of a fully developed and validated ELISA kit we honed to enable the counterpart to focus on the real problem of diagnosis and control. The TCP or CRP under which the ELISA is introduced is initially targeted on only one disease. However, once the technique is firmly established, the range of diseases for which it is utilized is gradually expanded.

Along with the development of the ELISA kits came the development of statistically valid and epidemiological sound sampling frames to estimate prevalence or incidence of infection/vaccination. This technology and the use of computers and specialist software to facilitate data transfer and management, forms an integral part of our development work and technology transfer. The results of these introduced monitoring systems are now being published routinely by a number of African countries and this data contrasts sharply to previous passive monitoring reports relying on *ad hoc* information.

In Africa our support has concentrated on the two main diseases threatening livestock in the region, rinderpest and trypanosomiasis through a FAO/IAEA Coordinated Research Programme on the sero-monitoring of rinderpest in Africa and through a FAO/IAEA Coordinated Research Programme and Regional Technical Cooperation Project to Improve the Diagnosis and Control of Animal Trypanosomiasis in Africa through the Application of Immunoassay Techniques (e.g. ELISA). Apart from these regional programmes a number of ELISAs for other diseases like pest des petits ruminants (PPR), CBPP, bovine leucosis, foot-and-mouth disease (FMD), infectious bovine rhinotracheitis (IBR), babesiosis, brucellosis, African horse sickness and swine fever, are supported at the national level. The rinderpest programme is a component part of the Pan African Rinderpest Campaign (PARC). In essence a network of 21 national laboratories has been established which utilizes the FAO/IAEA rinderpest competitive ELISA to detect antibodies to rinderpest in cattle to determine the effectiveness of national rinderpest vaccination programmes. As countries move towards a cessation of vaccination, this same system will be used to identify any remaining pockets of virus activity within a country and verify freedom from the disease and its causative agent. This programme now over 8 years old, is based on a standardized sampling design, executed on a yearly basis, with standardized data collection and reporting procedures Results are published in a single document by the Joint FAO/IAEA Division each year.

In trypanosomiasis the standard parasitological techniques to monitor the large scale trypanosomiasis and tsetse control programmes in Africa have proved too insensitive. Working closely with the International Laboratory for Research on Animal Diseases (ILRAD), Kenya we have developed a FAO/IAEA trypanosomiasis ELISA based on monoclonal antibodies for detecting antigens of the various trypanosomiasis species, which, used in conjunction with existing techniques, does provide the required level of sensitivity and specificity. Through a FAO-/IAEA Coordinated Research Programme, an IAEA Regional Project and a number of IAEA national TCPs this ELISA is now being introduced and used within the context of existing national trypanosomiasis/tsetse control programmes.

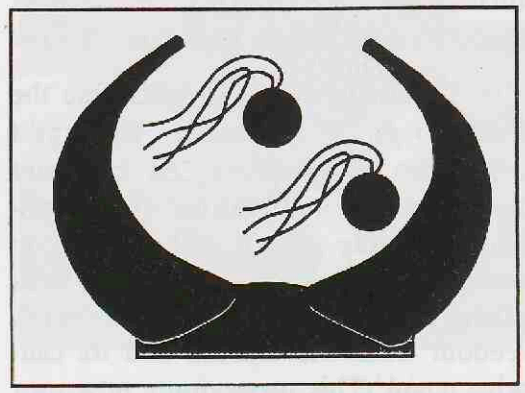
Conclusion

The diagnostic capabilities of national veterinary laboratories in Africa to monitor the major diseases affecting their livestock have been visibly strengthened through the introduction of ELISA technology. This technology and its use in national and regional disease control programmes has now been firmly established in a sustainable manner in over 25 countries in Africa.

Central to the success of the programme has been the provision of standardized and internationally validated ELISA kits. Sustainability has been achieved through widespread regional training and the establishment of a cadre of African scientists capable of utilizing this technology. The emphasis, which at the beginning of the programme was focused on technology transfer, has now changed and is concerned with the use of this technology as an epidemiological tool for the monitoring of disease control and eradication programmes. Both the OAU/-IBAR and OIE can now look forward to receiving reliable and routine reports on the prevalence of the major animal diseases and the progress of control and eradication of these diseases from the majority of countries within the region, based on quality assured ELISA data.

R. Geiger and M.H. Jeggo

Animal Production and Health Section, Joint FAO/IAEA Division, P.O. Box 100, A-1400 Vienna, Austria.



DERMATOPHILOSIS NEWSLETTER

Vol. 1 No. 1 November 1994

FOR YOUR INFORMATION (1)

FIRST ISSUE OF DERMATOPHILOSIS NEWSLETTER PUBLISHED

A new newsletter on a tropical animal disease has been launched recently. The first issue of the DERMATOPHILOSIS NEWSLETTER was produced in November, 1994, by a team of editors at the Royal Veterinary College (UK) and CIRAD-EMVT in France. Research efforts on dermatophilosis are currently conducted by groups in Africa, including Madagascar, Europe, the Caribbean and Australia. The Editors state that: 'Renewed interest in the disease and recent progress in the understanding of its pathogenesis and methods for its control have made the need for rapid communication between researchers very apparent'. The editors further indicate that: 'The aims are to meet that need, at least in part, by providing a forum for discussion of new ideas and results'.
The publication of this Newsletter is sponsored by a STD-3 programme of the European Union.

The lay-out of the DERMATOPHILOSIS NEWSLETTER resembles that of the successful COWDRIA NEWSLETTER produced by CIRAD-EMVT. The first issue of the Newsletter contains a report and abstracts of the dermatophilosis-related presentations at the 1993 meeting of the American Society for Tropical Veterinary Medicine held in Guadeloupe. Furthermore it includes Part 1 (references for 1915-1940) of a *Dermatophilus* Database.

Certainly the DERMATOPHILOSIS NEWSLETTER is a valuable source of information for those working with livestock in Africa and it can serve as a useful medium for exchange of ideas and results. However, - as editors of EQUATOR we speak from experience - it is very important that those interested in the subject communicate any interesting information to the editors of the Newsletter. So, if you have any contributions to make on the subject or if you are interested to receive the DERMATOPHILOSIS NEWSLETTER (free of charge) you can write to: Dermatophilosis Newsletter Editorial Office, Dermatology Unit, Royal Veterinary College, Hawkshead Lane, North Mymms, Herts. AL9 7TA, United Kingdom.

FOR YOUR INFORMATION (2)

INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE (ILRI)

On 21 September, 1994, after several years of preparation, the International Livestock Research Institute (ILRI) was created based on the achievements of the International Laboratory for Research on Animal Diseases (ILRAD) in Nairobi (Kenya) and the International Livestock Centre for Africa (ILCA) which had its head office in Addis Abeba in Ethiopia. By the creation of ILRI both ILRAD and ILCA ceased to exist as separate institutions and the CGIAR (Consultative Group on International Agricultural Research) has now one institute responsible to undertake research on global constraints to livestock productivity. At the foundation ceremony in Berne, Switzerland, Dr. Robert W. Herdt of the Rockefeller Foundation formulated the mission of ILRI as follows: 'To improve the well-being of poor people in the developing world by increasing the knowledge of animal agriculture. It will be a centre dedicated to meeting farmers' social and economic needs for animal agriculture, with a strong base in production systems, strong programmes to improve feed resources and a strong programme of disease research'. The research programme of ILRI will span a full spectrum of research , from strategic work to reveal the molecular physiology of immune responses to disease pathogens in farm animals, to socio-economic studies to determine the constraints farmers face in adopting new technologies in livestock production.

The formation of a single institute for animal research can not be seen separate from the declining donor funding for ILRAD and ILCA over the last years. However, as Dr. A.R. Gray, former Director General of ILRAD writes in the foreword of the ILRAD 1993/4 Annual Report: 'The installation of a new Chairman of the CGIAR (Mr. Ismail Serageldin), whose support of global efforts to increase food secu-

rity and future food supplies, is incisive as well as impassioned will, we hope, persuade donors to reverse the recent fall in support for international agricultural research'.
From 1 January, 1995 Dr. Hank Fitzhugh, the former Director General of ILCA, is the Director General of ILRI.

FOR YOUR INFORMATION (3)

ASSOCIATION OF VETERINARY CONSULTANTS

On 8 August, 1994, during the EAVPT congress in Edinburgh the first informal discussions took place concerning the establishment of the AVC - Association of Veterinary Consultants. Representatives from the UK, France and Belgium were present at this meeting. Veterinarians performing the following duties could apply for membership: advisors to the pharmaceutical industry, advisors on animal health programmes and those advising on quality matters in the food industry. The formal establishment of the Association is likely to take place during the IBC Symposium 'International Harmonization for Veterinary Medicines' on 26-27 January, 1995 in the Hotel Metropole in Brussels (Belgium). The contact person for the Netherlands is Dr. Christiaan Folkers, Animal Health Industry Consultancy, Burgemeester van Hellenberg Hubarlaan 5, 1217 LJ Hilversum (Tel. and telefax: +31.35.243200).

(Source: Tijdschrift voor Diergeneeskunde 120: pp. 25, januari 1995).

PROBLEMS FOR LIVESTOCK SMALLHOLDERS IN THE TROPICS[1]

The green revolution can point to several successes in the crop sector, but major breakthroughs in the field of animal production are still lacking. In South East Asia national targets for animal production are far from being realized. The contribution in the form of animal products must come from the small farmers, because it is estimated that approximately 76-95% of the different animal species populations are owned by small farmers on farms with an average size of 1 - 2 ha. In sub-Saharan Africa the production of livestock in terms of meat and milk is still one of the lowest of the world, despite large investments in animal production projects. Here 71 percent of the population lives in rural areas, of which 30 percent are classified as extremely poor. It is assumed that the animal production is largely in the hands of smallholders.
In order to increase production it is essential to develop methodologies which clearly pin point the needs and constraints of the small farmer, as in the past too much emphasis has been placed on large enterprises.

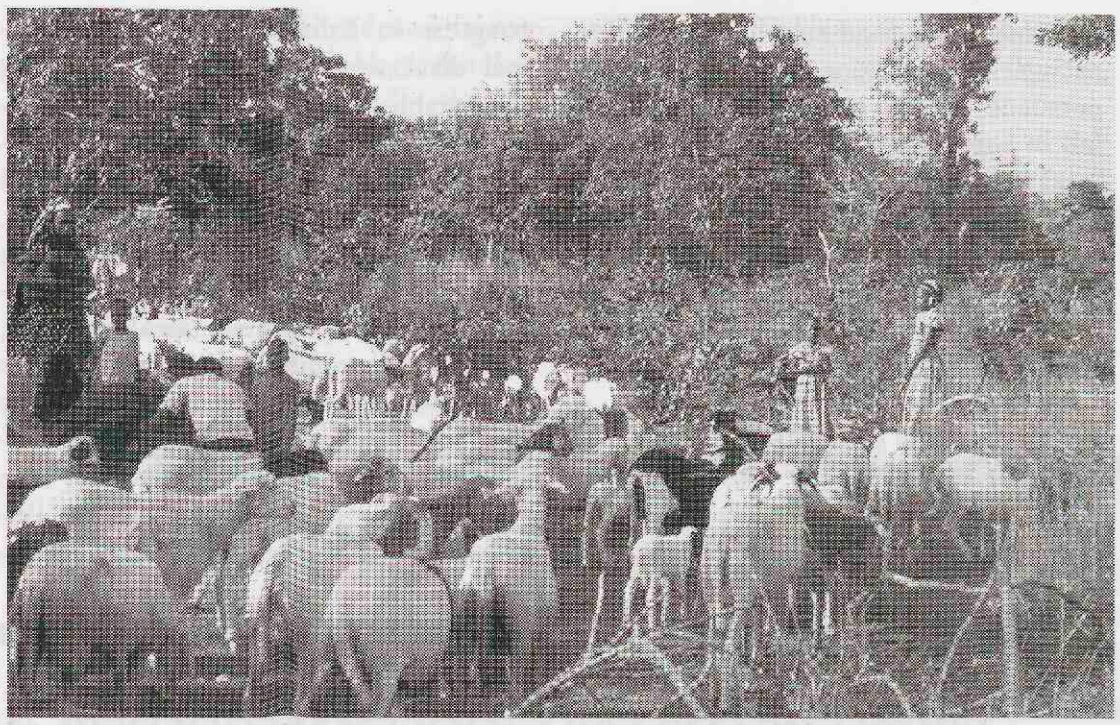
The need for farming system research
An important reason for the low impact of new technologies could be that the interactions of livestock with socio-economic and physical environments have not been properly understood. Animal scientists, in contrast to crop scientists, have lagged behind in using farming system research as a tool and are still very much disciplinary oriented. As a consequence this has hampered a proper "diagnoses" of the constraints and needs of the small farmer and the application of the necessary "treatments". On the contrary, most of the designs and improvements are science but not demand driven and often quite inappropriate to the needs of the small farmer.

Veterinary researchers have put great emphasis on the study of cell, organ and animal systems. The study of multifactorial diseases that can be found on a farm, in a population or a region is just starting.
The central idea of farming system research (FSR) is that one must understand a system following a strict "clinical examination" before one can influence it in a predictable manner.

Farmers must be more closely involved in this research, in what has been called Farmer Participatory Research. However, the farmer is not a scientist and what he perceives as "normal", such as poor performance, slow growth rate or extended breeding cycles, will be regarded as abnormal by the scientist. Even when a proper diagnosis of the problems has been made, technology transfer to livestock small holders is fraught with difficulties.

Importance of quantitative and economic analysis of livestock activities
In order to achieve a quantitative ana-

Proper data collection in the field is essential; collecting ticks on local sheep (photo: Paling)



Djallonke sheep in West Africa; an indigenous trypanotolerant sheep breed that needs to be conserved (photo: Paling)

lysis of livestock activities, data must be collected which can be used in models. Changes over time, whereby through population pressure the number of livestock diminishes, can so be quantified. Herd health programmes, although often aiming at a few parameters e.g. reproduction, calf mortality, etc., are also starting in developing countries. Their role on small farms in Asia and Africa will be limited.

By combining epidemiological and economic data an assessment was made of the economic impact of theileriosis and its control. The multipurpose use of cattle, the lack of reliable data, the estimation of the value of manure and draught power, makes such a cost/benefit analysis often difficult.

Interactive Multiple Goal Linear Programming as part of a FSR can be used as an important tool to set the research agenda, whereby it aims at a more efficient use of usually scarce resources. Priority setting is important, but very difficult. A technical principle may be sound, e.g. urea treatment, but whether it is economically attractive depends upon the farming system.

The tendency to focus on infectious diseases at the detriment of non-infectious and production diseases, is another example of wrong priorities. The observation that the output of animal products per animal health worker has declined in the eighties, is another indication that the priorities have not been set properly. In general livestock production has not received the priority, which it should deserve based on its contribution to rural development.

Some elements of the multidimensional matrix of factors which are important in farming systems will be looked at in more detail.

Classification of diseases and priority setting for actions

The usual classification into infectious and non-infectious diseases does not contribute greatly to decision making in developing strategies for improvements in animal health. A more useful classification has been used by Winrock [2] in its constraint analysis of animal agriculture in sub-Saharan Africa. This classification can be summarized as follows.

Group 1 diseases

Diseases that are independent of ecozones or production systems and cause high mortalities and severe economic loss e.g. rinderpest. The technical solutions are largely known, although there is a need for (multivalent) thermostable vaccines. Socio-economic constraints like diagnosis, data collection, drug delivery and (mis)use of drugs are still important.

Group 2 diseases

Diseases that are mainly vector transmitted. Their presence and severity is often ecozone dependent due to the environmental requirements of their insect vectors e.g. tick borne diseases. They are partly independent of the production system and partly dependent, e.g. in intensive dairy production with exotic animals.

Group 3 diseases

Diseases that are largely independent of the ecozone but their importance increases as production systems are intensified. They cause low mortality except under neo-nates. They are multifactorial and solutions are based on the application of known technical solutions.

Proper data collection is essential for all three groups of diseases. The lack of suitable comprehensive information on which to base priorities, planning and monitoring of the activities of livestock services is a major constraint on the effective implementation of such services. Although, numerous countries are actively engaged in collecting data at diagnostic centres. Livestock services must continuously assess and rank priorities for male and female farmers, clearly identify problems and categorize priorities into those for which solutions are already available and those that require further research. A link with socio-economic benefits is thereby essential otherwise the diagnostic centres will remain just centres for data collection.

The role of livestock in agriculture

Identification of agricultural production systems in which livestock is important, is another analytical task in FSR. Winrock identifies the following production systems:

- Livestock based system with pastoral migration of cattle.
- Livestock based systems with pastoral or sedentary cattle found in Latin America, Australia and Africa as extensive ranching or intensive grazing on small and medium sized farms.
- Mixed farms with crop and cattle and small ruminants. Crops are either millet and sorghum (Africa), wheat and clover (North Africa and West Asia), maize (sub-Saharan Africa, Latin America) or wheat (South Asia).
- Mixed farms with buffalo and cattle. Crops are rice, roots and tubers (Asia).
- Crop based systems. Livestock contributes draft power, manure.
- Intensive (commercial) production systems.

[1] Edited version of a paper presented at the 5th Symposium Tropical Animal Health and Production, 30 September, 1994, Utrecht, the Netherlands.

These production systems take place in different agro-ecological zones. Winrock distinguish 5 zones, based on rainfall, plant growing days and the so called highlands with temperatures less than 20°c. If agro-ecological zones, identified constraints and livestock systems are put together in a matrix, different opportunities for solutions exist. A few of these will be worked out in more detail.

Requirements and solutions to improve livestock production

The development of layman friendly diagnostic tools at the side of the animal and the producer is one prerequisite. This does not only include tests for the presence of antigens or antibodies, but also for hormones e.g. progesterone and other body proteins, like metabolic markers in order to identify the consequences of sub-optimal mineral intake before productivity declines.

In the field of animal health there is also a need for thermostable multivalent vaccines.

Post-harvest handling of meat and milk with all its veterinary public health aspects is an essential research component if the smallholder wants to produce for the market.

Early identification of disease resistance and genes responsible for them is another research topic. Genetic resistance will reduce the need for vaccination and/or chemotherapeutic treatment. Artificial insemination and embryo transfer can be used to amplify valuable germ plasma.

In the field of animal nutrition, many attempts have been made to improve the quality of straw by urea treatment.

Genetic manipulation of plants to increase the nutritive value of crop residues is slowly gaining ground amongst plant breeders. Genetic modification of rumenal microflora to enhance food digestibility and reduce methane production is another approach. A limiting factor is that we know very little about the mechanisms that regulate feed intake in ruminants.

Other opportunities like natural resources management and/or socio-economic factors are just as important as the ones mentioned above, but fall not within the scope of this paper.

D. Zwart

(Department of Animal Production Systems, Agricultural University, P.O. Box 338, 6700 AH Wageningen, the Netherlands).

RECENT PUBLICATIONS (16)

The section RECENT PUBLICATIONS is included in the English issues of EQUATOR. Scientific publications of the Faculty of Veterinary Medicine and other research institutes in the Netherlands, relevant to livestock production and health in the tropics as well as titles of papers by Dutch veterinary scientists working on animal health and production topics in relation to developing countries, will be included. Please inform the editor of your publications so we can bring them to the attention of the readers of EQUATOR. For reprints contact the authors directly, their addresses can be obtained from the editorial office (Office for International Cooperation, P.O. Box 80.163, 3508 TD Utrecht, The Netherlands). Copies of the "Abstracts of the 5th symposium on Tropical Animal Health and Production: Application of Biotechnology" can also be obtained from this office.

ANIMAL HEALTH

Cadman, H.F., Kelly, P.J., Zhou, R., Davelaar, F. and Mason, P.R. (1994). A serosurvey using enzyme-linked immunosorbent assay for antibodies against poultry pathogens in ostriches (*Struthio camelus*) from Zimbabwe. Avian Diseases 38: 621-625.

Balogh, K. de, Bbalo, G.C., Bohm, R., Chizyuka, H.G.B., Kigan, B., Komba, G.L., Muyoyeta, P.M., Tuchili, L.M., Turnbull, P.C.B., Devos, V. and Roberts, D.H. (1994). Anthrax control and research with special reference to national program-development in Africa - Memorandum from a WHO meeting. Bulletin of the World Health Organization 72: 13-22.

Balogh, K.K.I.M. de, Wandeler, A.I. and Meslin, F.X. (1993). A dog ecology study in urban and semirural areas of Zambia. Onderstepoort Journal of Veterinary Research 60: 437-443.

Davelaar, F.G. and Hill, F.W.G. (1993). Production d'anticorps chez les jeunes poulets de chair (broilers) en response a une vaccination contre *Mycoplasma gallisepticum*. Proceedings of the Rencontres Internationales de Production Avicole 1993, Nantes, 2 Juin, 1993, pp. 31-37.

Kelly, P.J., Chitauro, D., Rohde, C., Rukwava, J, Majok, A., Davelaar, F. and Mason, P.R. (1994). Diseases and management of backyard chicken flocks in Chitungwiza, Zimbabwe. Avian Diseases 38: 626-629.

LIVESTOCK PRODUCTION

Dwinger, R.H., Capella, E., Pérez, E., Baaijen, M. and Müller, E. (1994). Application of a computerized herd management and production control program in Costa Rica. Tropical Agriculture (Trinidad) 71: 74-76.

Klink, E.G.M. van (1994). Aspects of productivity of traditionally managed Barotse cattle in the Western Province of Zambia. PhD thesis, Wageningen Agricultural University, Wageningen, pp. 227.

Zwart, D. (1994). Problems for livestock smallholders in the tropics. In: Abstracts of the 5th symposium on Tropical Animal Health and Production: Application of Biotechnology. Eds. R.W. Paling and J.H.A. de Gooijer, Utrecht, 30 September, 1994, Utrecht University, pp. 7-12.

TICK-BORNE DISEASES, THEIR AGENTS AND VECTORS

Barbet, A.F., Semu, S.M., Chigagure, N., Kelly, P.J., Jongejan, J. and Mahan, S.M. (1994). Size variation of the major immunodominant protein of *Cowdria ruminantium*. Clinical and Diagnostic Laboratory Immunology 1: 744-746.

Mahan, S.M., McGuire, T.C., Semu, S.M., Bowie, M.V., Jongejan, F., Rurangirwa, F.R. and Barbet, A.F. (1994). Molecular cloning of a gene encoding the immunogenic 21 kDa protein of *Cowdria ruminantium*. Microbiology 140: 2135-2142.

Oliveira, C. d', Kok, J.B. de, Weide, M. van der, Shiels, B.R., Tait, A., Cornelissen, A.W.C.A. and Jongejan, F. (1994). Recombinant vaccine development and improved diagnostic methods for tropical theileriosis (*Theileria annulata* infection). In: Abstracts of the 5th symposium on Tropical Animal Health and Production: Application of Biotechnology. Eds. R.W. Paling and J.H.A. de Gooijer, Utrecht, 30 September, 1994, Utrecht University, pp. 33-38.

Stagg, D.A., Bishop, R.P., Shaw, M.K., Wesonga, D., Orinda, G.O., Grootenhuis, J.G., Molyneux, D.H. and Young, A.S. (1994). Characterization of *Theileria parva* which infects waterbuck (*Kobus defassa*). Parasitology 108: 543-554.

Vliet, A.H.M. van, Mahan, S.M., Martinez, D., Camus, E., Zeijst, B.A.M. van der and Jongejan, F. (1994). Development of a *Cowdria ruminantium* specific ELISA based on recombinant antigens. In: Abstracts of the 5th symposium on Tropical Animal Health and Production: Application of Biotechnology. Eds. R.W. Paling and J.H.A. de Gooijer, Utrecht, 30 September, 1994, Utrecht University, pp. 29-32.

TSETSE AND TRYPANOSOMIASIS

Dwinger, R.H., Agyemang, K., Kaufmann, J., Grieve, A.S. and Bah. M.L. (1994). Effects of trypanosome and helminth infections on health and production parameters of village N'Dama cattle in The Gambia. Veterinary Parasitology 54: 353-365.

Reduth, D., Grootenhuis, J.G., Olubayo, R.O., Muranjan, M., Oticno-Omondi, F.P., Morgan, G.A., Brun, R., Williams, D.J.L. and Black, S.J. (1994). African buffalo serum contains novel trypanocidal protein. Journal of Eukaryotic Microbiology 41: 95-103.

BIC NEWS

FIFTH INTERNATIONAL COURSE "INTRODUCTION TO HERD HEALTH AND EPIDEMIOLOGY"

The fifth international course "Introduction to herd health and epidemiology" will be organized from 9 October to 24 November 1995 at the Department of Herd Health and Reproduction of the Faculty of Veterinary Medicine of Utrecht University. The Office for International Cooperation organizes this 7-week post-academic course.

Subjects

The course is directed towards dairy cattle and dairy cattle husbandry. The following subjects will be given attention:

* Introduction to herd health and the VAMPP-programme for fertility control of dairy cattle;
* introduction to veterinary epidemiology;
* fertility analysis and aspects of reproduction like gynaecology, animal husbandry, artificial insemination and embryo transfer;
* claw disorders;
* mastitis: diagnosis, epidemiology, therapy and prevention;
* calf rearing and nutrition.

Besides attending lectures, practicals and demonstrations, participants will visit a number of dairy farms in the service area of the ambulatory clinic of the Faculty and they will join excursions to veterinary institutes and/or health services. Also, the touristic interest of the participants will not be forgotten. The course includes 2 days of excursions to interesting sites in the Netherlands.
Following this course, the possibility exists to follow more specialized training on an individual basis.

Course fee

The course fee is Dfl. 7,500 excluding the costs for travel, subsistence, lodging and medical insurance.

Information and application

The coordinating bureau requires a good knowledge of the level of education and the working conditions of the candidates for selecting the appropriate participants for the course. Therefore, applicants have to send a letter with a detailed curriculum vitae, stressing academic and/or professional merits. Furthermore, a certified statement of approval to participate in the course from responsible superiors and a declaration by the granting authority should be included. Closing date for registration is 1 August, 1995. For information and application, please contact the Office for International Cooperation, Faculty of Veterinary Medicine, P.O. Box 80.163, 3508 TD Utrecht, the Netherlands (Tel.: +31.30-532116, telefax: +31.30-531815, E.mail: bic@bic.dgk.ruu.nl).

CALENDAR 1995

Amsterdam, the Netherlands
September, 1995 - June, 1996.
International MSc course in Biomedical Research Development. Organized by: Royal Tropical Institute and University of Amsterdam. The course is aimed at providing researchers, especially those from or working in developing countries, with improved knowledge of and skills in new developments in biomedical techniques, planning and performing of research and assessment of results. Course programme: Module 1: Introduction and review; Module 2: Basic research methods and tools; Module 3: Design and execution of research projects; Module 4: Advanced methods: research methodology and tools; Module 5: Individual project. Course fee: Dfl. 25,500. Closing date for submission of preliminary application form: 15 February, 1995. Information and application: Dr. E.P. Wright, Faculty of Medicine, University of Amsterdam, Meiburgdreef 15, 1105 AZ Amsterdam (Telefax: +31.20.6912401).

Yokohama, Japan
3-9 September, 1995.
World Veterinary Congress. XXV Congress of the World Veterinary Association and XX Congress of the World Small Animal Veterinary Association. Theme: Advancing Veterinary Profession in a Changing World. For inquiries regarding a request for the first announcement and registration procedures contact: The Secretariat WVC, c/o Sankei Convention, Sankei Building 10F, 1-7-2, Otemachi, Chiyoda-ku, Tokyo 100 (Tel.: +81.3.32732084, telefax: +81.3.32732439).

Berlin, Germany
25-29 September, 1995.
8th International Conference of Institutes of Tropical Veterinary Medicine: Livestock production and diseases in the tropics: Livestock production and human welfare. Organized by: Association of Institutions of tropical Veterinary Medicine (AITVM). Programma: Plenary sessions with papers of invited speakers and six workshops introduced by brief communications and posters on: Peri-urban livestock production; Epidemiology

and socio-economics in different livestock systems; Impact of livestock on the environment; Veterinary public health in different livestock systems; The role of women in animal husbandry and Target oriented training needs, demands and facilities in less developed countries. For registration and submission of brief communications: Prof. Dr. D. Mehlitz, Institute for Parasitology and Tropical Veterinary Medicine, Free University of Berlin, Koeningsweg, 14163 Berlin.

Utrecht, the Netherlands
9 October - 24 November, 1995.
5th International Course "Introduction to Herd Health and Epidemiology". Organized by the Office for International Cooperation and the Department of Herd Health and Reproduction of the Faculty of Veterinary Medicine. Programme: See under "BIC News". Course fee: Dfl. 7,500,-. Closing date for registration 1 August, 1995. Information and registration: Office for International Cooperation, P.O. Box 80.163, 3508 TD Utrecht (Tel.: +31.30532116, telefax: +31.30.531815, E-mail bic@bic.dgk.ruu.nl).

Alphen aan de Rijn, the Netherlands
31 March - 2 April, 1995
5th International Symposium on: Pathology of Reptiles and Amphibians. Subject: recent developments in the broad area of pathological aspects of reptiles and amphibians. Preliminary observations are welcomed. Location: AVIFAUNA, Dutch National Bird Park in Alphen aan de Rijn. Congress fee: after 1st February, 1995: DM 375. Correspondence: Prof. Dr. P. Zwart, Burg. v.d. Weijerstraat 16, 3981 EK Bunnik (Tel.: +31-.3405.61644, telefax: +31.3405.67262).

Berlin, Germany
1 April, 1995 - 31 June, 1996.
Master course in Tropical Veterinary Epidemiology. Postgraduate training for veterinarians with a background in veterinary epidemiology and/or preventive medicine in a (sub)tropical country. Training in modern concepts of population medicine aims at improving skills in handling complex disease problems and in implementing appropriate action to improve the health status of animal populations. Information: Free University of Berlin, Postgraduate Studies in Tropical Veterinary Medicine, Augustrasse 37, 12203 Berlin (Tel.: +49.30.8348413, telefax: +49.-30.8341908).

Berlin, Germany
April - July, 1995.
Short term courses in Tropical Veterinary Epidemiology. Module I (18 April - 5 May, 1995): Introduction to computers and orientation to statistics. Module II (8 May - 2 June, 1995): Introduction to epidemiology and applied statistics. Module III (3 - 28 July, 1995): Quantitative epidemiology and advanced medical statistics for epidemiology. Information: Free University of Berlin, Postgraduate Studies in Tropical Veterinary Medicine, Augustrasse 37, 12203 Berlin (Tel: +49.30.8348413, telefax: +49.30.8341908).

San José, Costa Rica
8 - 12 May, 1995.
3rd Biennial meeting of the Society for Tropical Veterinary Medicine (STVM). Symposia: (1) Vector-borne pathogens: challenges for the 21st century; (2) International trade and animal diseases; and (3) General sessions: Contributed papers on Tropical veterinary medicine. Registration fee us$ 250.00. Registration and information: Dr. J. A. House, STVM-95 Chairman, USDA Aphis Faddl, Box 848, Greenport, NY 11944, USA (Tel.: +1.516.3232500 ext. 350, telefax: +1.516.323-2798, E-mail a349jhouse@attmail.com).

Wageningen, the Netherlands
11 June - 8 or 22 July, 1995.
44th International course on rural extension. 'Core Course' programme of 3 weeks: Introduction to group communication skills and Strategic diagnosis of agricultural knowledge systems and 1 week Extension management. A 6 week course until 22 July, 1995 includes the 3 week core course programme and a 3 week specialization in one of the following subjects: Management of extension programmes; Training for trainers of extension workers or Research-extension-farmer linkages. Course fee: Dfl. 5,000 for the 4-week course and Dfl. 9,000 for the 6 week course. Closing date: 20 March, 1995. Information and registration: International Agricultural Centre (IAC), P.O. Box 88, 6700 AB Wageningen (Tel.: +31.8370.90111, telefax: +31.8370.18552).

Barneveld, the Netherlands
19 June - 7 July, 1995.
2nd Course on: Artificial insemination in pigs. Subjects: Collection of semen; Evaluation and processing of semen in the laboratory; Insemination and sow production control; Organization of an AI station and Selection of breeding stock. Fees including board and lodging: 6,500. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.3420.-14881, telefax: +31.3420.92813).

Utrecht, the Netherlands
19 - 30 June, 1995.
Intensive course on Laboratory Animal Science. Objective of the course: to present basic facts and principles that are essential for the humane use of animals and for the quality of research. Some subjects: gnotobiology; animal welfare, euthanasia; statistics; biology and husbandry of laboratory animals; laboratory animal science databases (PREX); protocols for experiments; behaviour, housing, stress and well being; anaesthesia; genetic standardization; N.M.R. facility; microsurgery; animal handling; alternatives to animal experiments; ethics; nutrition; legislation and regulations and practical training. Fees: course fee Dfl. 2,550; board and lodging Dfl. 1,950. Closing date: 1 May, 1995. Information and registration: Mrs. M. Albers, Dep. of Laboratory Animal Science, Faculty of Veterinary Medicine, P.O. Box 80.166, 3508 TD Utrecht (Tel.: +31.30.-532033, telefax: +31.30.537997).

Wageningen, the Netherlands
20 August - 24 November, 1995.
23th International course on dairy farming in rural development. Course programme: Introduction; Dairy development; Farming systems; Statistics; Economics and agricultural credit; Breeding; Pasture production; Nutrition and feeding: Animal health; Reproduction and AI, Extension and case studies. Course fee: Dfl. 4,500. Closing date: 1 May, 1995. Information and registration: International Agricultural Centre (IAC),
P.O. Box 88, 6700 AB Wageningen (Tel.: +31.8370.90111, telefax: +31.8370.18552).

Deventer, the Netherlands
21 August, 1995 - 6 June, 1996.
International course on "Tropical Animal Production. Organized by: Larenstein International Agricultural College Deventer. Entry requirements: Diploma or degree in Animal Science and minimal 5 years relevant professional experience. Programme: Integrated approach to feed production, nutrition and reproduction of farm animals; management of farms and farm units; farm economics and extension approaches; farming systems analysis; rapid rural appraisal and an international excursion. The approach is problem-oriented to enhance the problem solving capacity of the participants. Tuition fee: Dfl. 9,675; Board and lodging: Dfl.17,000. Information and registration: Registry Larenstein I.A.C., P.O. Box 7, 7400 DA Deventer (Tel.: +31.5700.84654, telefax: 31.5700.84608).

Barneveld, the Netherlands
23 August 1995 - 22 February, 1996.
25th International course on poultry husbandry and 25th International course on pig husbandry. These courses will run at the same time. Following these courses participation is possible in the 18th International animal feed training programme, which runs from 25 February to 24 May, 1996. Direct entry in this last course is also possible. Fees including board and lodging: Poultry course: Dfl 24,500; Pig course: Dfl. 24,500, Feed course; Dfl. 12,000 or 14,500 (direct entry). Closing date: 1 May, 1995. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.-3420.14881, telefax: +31.3420.92813).

Berg-en-Dal, Kruger National Park, South Africa
28 August - 1 September, 1995.
The Second international conference on tick-borne pathogens at the host-vector interface (THOI); Tick-host-pathogen interactions: A global perspective. Organized by: Onderstepoort Veterinary Institute and Medical University of South Africa. The goal of the conference is to create a forum to review the current status on the biology and ecology of ticks and tick-borne animal pathogens, especially those of Africa. A 4-day post conference workshop on ticks and tick-borne disease identification and diagnostics is envisaged at Onderstepoort under the auspices of the Office International des epizooties. Information and registration: Ms. T. Wilhelmi, Onderstepoort Veterinary Institute, Private Bag X05, Onderstepoort 0110, Rep. of South Africa (Tel. +27.12.5299329, telefax: +27-.12.556573, E-mail: tamara@moon.ovi.ac.za).

EQUATOR

JAARGANG 7, NO 2 INFORMATIEBLAD OVER VETERINAIRE ASPECTEN VAN ONTWIKKELINGSSAMENWERKING

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Indien onbestelbaar gaarne retour aan het redactie adres.

Maart 1995

van de redactie

In deze editie van EQUATOR ligt het accent op het tweede gedeelte van het dierlijke-produktieproces, namelijk de behandeling en verwerking van het geslachte dier. Een belangrijk aspect van de dierlijke produktie dat vaak te weinig onder de aandacht komt van de veehouders en hun voorlichters, zoals de dierenartsen. Het betrekken van de veehouder bij het gehele produktieproces is een relatief nieuwe ontwikkeling die onderdeel uitmaakt van de in Nederland gestarte integrale ketenbewaking.
Voor deze gelegenheid laten we professor B. Krol aan het woord. Als emeritus hoogleraar Technologie van de voedingsmiddelen van dierlijke oorsprong bij de Faculteit Diergeneeskunde en voormalig hoofd van de afdeling Nederlands Centrum voor Vleestechnologie bij CIVO-TNO in Zeist heeft professor Krol een uitgebreide ervaring op het gebied van de be- en verwerking van vlees en vis en de keuring van vlees en vleeswaren. Deze ervaring strekt zich uit van Ghana tot Indonesië. Prof. Krol is in een uitstekende positie om verschillen en overeenkomsten te zien tussen landen en continenten en te analyseren welke verwerkings- of conserveringsmethoden wel of niet met succes geïntroduceerd kunnen worden.
Ook over de huidige discussie in Nederland over de besteding en de hoogte van gelden voor ontwikkelingssamenwerking heeft hij een uitgesproken mening. Hij is een van de mensen die vindt dat het niet aangaat te ruzieën over een besteding van 0,8 of 0,7 procent van het bruto nationaal produkt aan ontwikkelingshulp terwijl er nog zoveel agrarische produktie verloren gaat en er nog zoveel mensen zijn die te weinig voedsel krijgen. *Het is een "must" om door te gaan. Als ik zie wat wij hier allemaal verspillen en wat wij ons kunnen permitteren, dan vind ik het gewoon absurd dat we hier nog zo lang over praten.* Aldus Prof. Krol tijdens het interview.

Bij de praktische uitwerking van professor Krol's ideeën is de vakgroep Voedingsmiddelen van Dierlijke Oorsprong van de Faculteit Diergeneeskunde nauw betrokken. Zo'n 10 jaar is samen met de Landbouwuniversiteit Wageningen een project uitgevoerd bij de landbouwfaculteit van de universiteit van Benin in West Afrika, waar een nieuwe afstudeerrichting 'Agro Nutrition' werd opgezet. Dr. Ir. J.H. Houben, de projectverantwoordelijke uit Utrecht bericht over het verloop en de resultaten van dit project.

Behalve docenten en onderzoekers van de Faculteit Diergeneeskunde die regelmatig op andere plaatsen van de globe vertoeven, verruimen ook studenten hun blik door een stage in een tropisch land. Dit moge blijken uit de verhalen in de rubriek 'Studentenstages in de tropen'. In deze aflevering van EQUATOR beschrijft Henk Antonis hoe het hem verging in Ecuador.

Tenslotte kondigen wij met plezier een uitbreiding van de redactie aan. Dr. René van Weeren, medewerker bij de Vakgroep Algemene Heelkunde en Heelkunde der Grote Huisdieren, komt onze redactie versterken. René heeft niet alleen gekende en misschien nog ongekende auteurstalenten, hij is ook langere tijd actief geweest in Afrika en Midden Amerika.

STUDENTENSTAGES IN DE TROPEN

Vijf maanden stage in Ecuador: een persoonlijk verslag

In mei 1994 begon postdoctoraalstudent diergeneeskunde Henk Antonis al tijdens het volgen van het keuze-coschap Tropencursus te zoeken naar mogelijkheden om een stage in de tropen te doen. Al gauw viel zijn keuze op Ecuador. Hij zou ter plaatse een onderzoekje gaan doen naar de rol van leverbot-infecties bij runderen. Dr. Egbert van der Kuip, projectleider van het Proyecto Modelo de Desarollo Lechero Integral in Canar tot augustus 1994, had al in 1993 de aanzet tot dit onderzoek gegeven (zie ook EQUATOR van november 1994, Jaargang 6, no.6). Na een intensieve voorbereiding bij de Faculteit Diergeneeskunde en het ID-DLO in Lelystad vertrok Henk Antonis al eind juli 1994 richting Zuid Amerika met een koffer vol reagentia, buisjes en titratieplaten. Hieronder volgt een kort verslag van zijn wederwaardigheden ter plaatse.

Guayaquil, dinsdag 26 juli 1994, 08.00 uur

Op de vliegtuigtrap, toen de tropische hitte als de spreekwoordelijke klamme deken op me viel, realiseerde ik me dat het nu echt begonnen was. Dat leverde een gevoel van opwinding en onrust op. Opwinding omdat alles nieuw en spannend was, onrust omdat een zeer korte en hectisch verlopen voorbereidingstijd misschien onvoldoende zou blijken. Ik stond aan het begin van een stageperiode van vijf maanden, waarin ik zou werken voor het Proyecto Modelo de Desarollo Lechero Integral in Canar, een streek die gelegen is op meer dan 3000 meter hoogte in de Andes. Ik zou gaan wonen in Cuenca, een stad met 200.000 inwoners.

Het project kent vijf participanten, twee Ecuadoriaanse organisaties, het Wereldvoedselprogramma en de Voedsel en Landbouw Organisatie van de Verenigde Naties en de Nederlandse regering. Het project heeft als belangrijkste doel het bevorderen van de melkveeteelt.

De achtergrond van mijn stage

Mijn opdracht was om een goede methode te vinden om onder de heersende omstandigheden leverbot-infecties te diagnostiseren bij runderen en om in kaart te brengen hoe groot het leverbotprobleem in het projectgebied is. Daarnaast wilde ik voor mezelf uitzoeken of ik geschikt zou zijn voor een toekomstige baan in de tropen.

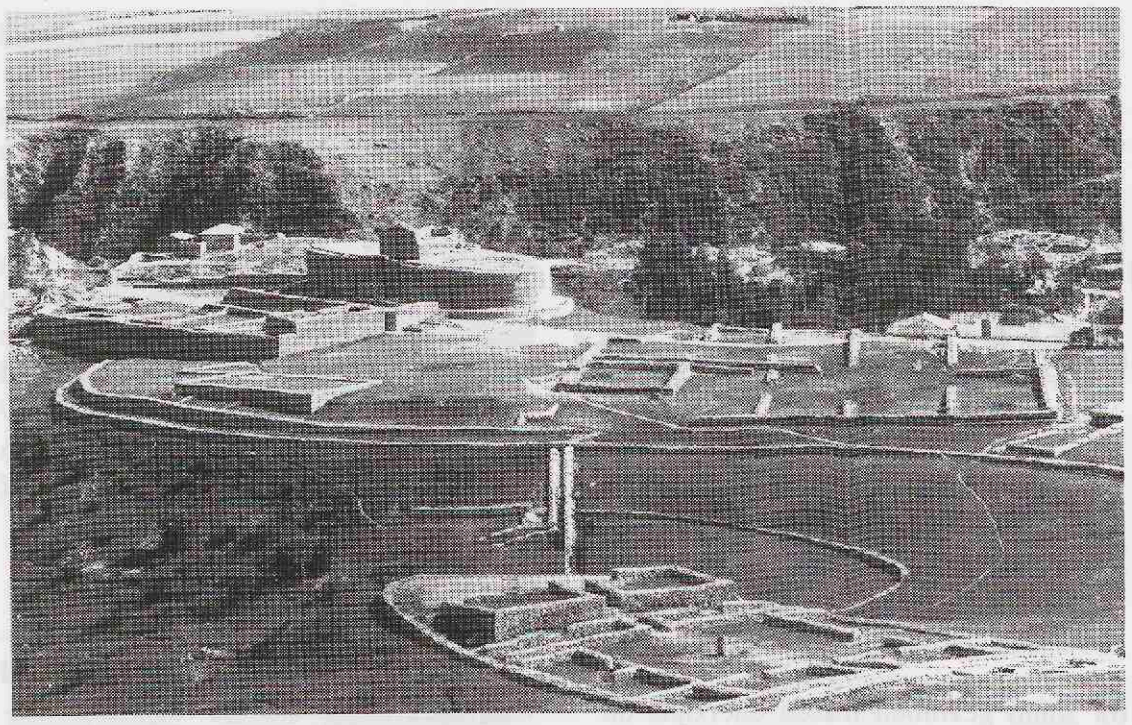
Interesse in ontwikkelingswerk had ik al heel lang. Ook had ik al vele verhalen van ex-tropengangers gehoord en gelezen. Deze verhalen deden mijn interesse niet verminderen, maar zij voedden wel steeds meer de twijfel of ik in een baan bij een ontwikkelingssamenwerkingsproject zou kunnen aarden. De bureaucratie, de trage besluitvorming, de commissies en de rapporten waarover ik hoorde en die ik las, deden mij uiteindelijk met een hoofd vol vooroordelen naar Ecuador vertrekken. En ik heb ze bijna allemaal bevestigd gekregen!! Het feit dat ik toch terug kijk op een fantastische periode is vooral vanwege de hartelijkheid, gastvrijheid en humor van de Ecuadorianen, maar heeft denk ik ook te maken met mijn, soms krampachtig volgehouden, voornemen me niet te ergeren of af te zetten en mijn klus zo goed mogelijk te klaren.

Ervaringen met de boeren

Het onderzoek heb ik uitgevoerd met Jorge Vergara, een dertigjarige student diergeneeskunde. Jorge wilde dit onderzoek gebruiken voor zijn afstudeerscriptie, zijn laatste obstakel op weg naar de doctorstitel en het afstuderen als dierenarts.

De eerste drie weken van het onderzoek hebben we bloed- en mestmonsters verzameld en sectie van de levers gedaan op het slachthuis in Cuenca. Dit om een idee te krijgen omtrent de mogelijkheden om met de uit Nederland meegebrachte serologische testen en parasitologische diagnostische methoden onder Ecuadoriaanse omstandigheden leverbot aan te tonen. Daarna gingen we dagelijks met een van de vier bij het project werkzame dierenartsen het veld in om bloedmonsters,

Veemarkt in Cuenca (foto: Antonis)



Incapirca, ruïnes van een Inca stad gelegen in het projectgebied (foto: Antonis)

Guayaquil, dinsdag 27 december, 09:00 uur

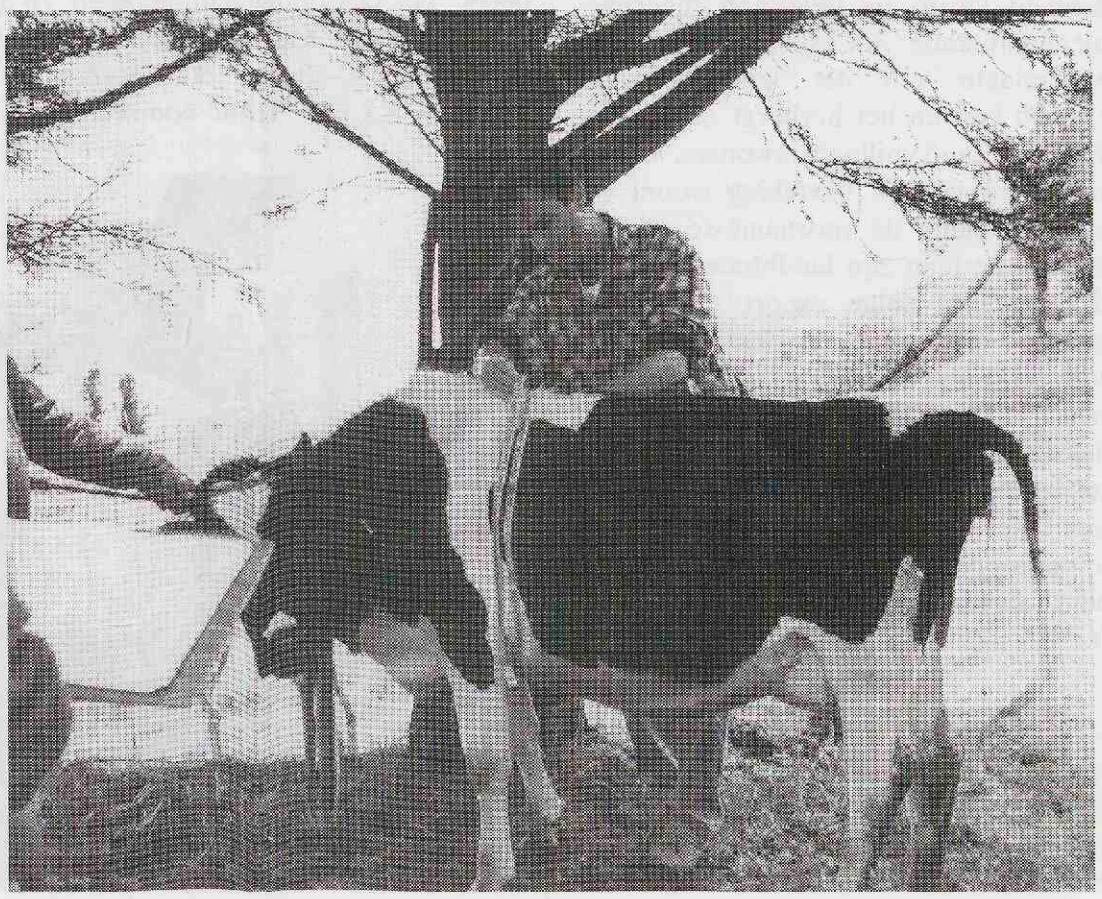
Opnieuw sta ik in de tropische hitte op de vliegtuigtrap. Nu met een tas en een hoofd vol herinneringen aan vele goede vrienden en een fantastische tijd, en met een vaag antwoord op mijn persoonlijke vraag: "Ik acht mezelf geschikt voor een baan in de tropen, mits ....."

Henk Antonis

mestmonsters en gegevens over de koeien en de bedrijfjes te verzamelen.
Zo kwam ik in aanraking met arme boeren die in dit gebied vaak van Indiaanse oorsprong zijn. Meestal kregen we eerst een maaltijd aangeboden, maar altijd enkele borrels tegen de koude of de warmte, afhankelijk van de weersomstandigheden. Eenmaal vroeg een boer me bij een dergelijke gelegenheid of ik een Yankee was. Toen ik dat ontkende, feliciteerde hij me daarmee, want hij had enkele dagen geleden gehoord dat de Yankees op de maan waren geweest. En een volk dat mensen naar de maan stuurde, moest in zijn ogen wel krankzinnig zijn.
Groot was mijn voldoening als ik een enkele keer, als tegenprestatie voor hun medewerking en de genoten gastvrijheid, iets voor hun dieren kon betekenen.

Samenwerking met de projectstaf

Ook heb ik veel plezier beleefd aan de samenwerking met de dierenartsen van het project. Vele voor de dagelijkse Nederlandse praktijk eenvoudige hulpmiddelen zijn in Ecuador niet beschikbaar. Dankzij de hulp van een smid bezit het project nu onder andere stuwkettinkjes, een mondsperder en een magneetschieter plus kooimagneten (voor de behandeling van het zogenaamde 'scherp in', scherpe metalen voorwerpen die zich in de voormagen van het rund kunnen bevinden *red.*).
Voor mijn vertrek benauwde het me dat ik een belangrijk deel van mijn verblijf alleen zou wonen en als enige buitenlander op het project zou werken. Dit bleek al snel ongegronde angst. De sfeer op het project was uiterst plezierig. Ik ontving veel hulp bij het werk, het verbeteren van mijn Spaans en tal van andere zaken. Al snel had ik een actief sociaal leven, waar behalve Ecuadorianen ook de bescheiden Nederlandse gemeenschap in Cuenca deel van uit maakte.



Henk Antonis verzamelt gegevens over de koeien die hij onderzocht, zoals het gewicht dat bepaald wordt met behulp van een meetband (foto: collectie Antonis)

'INSTITUTION BUILDING' AAN DE UNIVERSITÉ NATIONALE DU BÉNIN

In 1984 is er een samenwerkingsverband tot stand gekomen tussen enerzijds de Université Nationale du Bénin (UNB) en anderzijds de afdeling Humane Voeding van de Landbouwuniversiteit Wageningen (LUW) en de vakgroep Voedingsmiddelen van Dierlijke Oorsprong van de Faculteit Diergeneeskunde van de Universiteit Utrecht (UU). Het voornaamste doel was het helpen oprichten en consolideren van een nieuwe specialisatie: Voeding en Levensmiddelentechnologie binnen de landbouwkundige ingenieursopleiding aan de UBN in Cotonou, Benin. Het project, dat ondersteund werd door het Directoraat Generaal Internationale Samenwerking (DGIS) van het Ministerie van Buitenlandse Zaken is onlangs afgesloten. Slechts een aantal zaken wordt nog afgerond in het kader van een zogenaamd Après-projet. Een goede gelegenheid om de Utrechtse project verantwoordelijke Dr. Ir. Jacques Houben, die sinds de start verbonden is geweest aan dit project, te vragen verslag te doen van deze succesvolle samenwerking tussen de Universiteiten Benin, Utrecht en Wageningen.

Benin

Benin (het voormalige Dahomey) aan de Afrikaanse westkust, werd in 1960 zelfstandig en koos in 1974 een marxistisch-leninistische koers. Na een woelige periode van toenemende ontevredenheid kwam in 1991 een meerpartijendemocratie tot stand. De totale oppervlakte van het land bedraagt 112.600 km^2 en het herbergt een bevolking van ca. 5 miljoen inwoners. Ongeveer 70% van de bevolking woont op het platteland; de voornaamste middelen van bestaan zijn landbouw en visserij. Er vindt enige export plaats van katoen, palmolie en cashew-noten. Veeteelt vindt slechts op beperkte schaal plaats. Het land bezit weinig delfstoffen. Benin behoort tot de armste landen ter wereld. De situatie is er niet beter op geworden sinds de recente ontkoppeling van de lokale munteenheid -de Franc CFA - van de Franse frank.

Een nieuwe studierichting 'Agro-Nutrition'

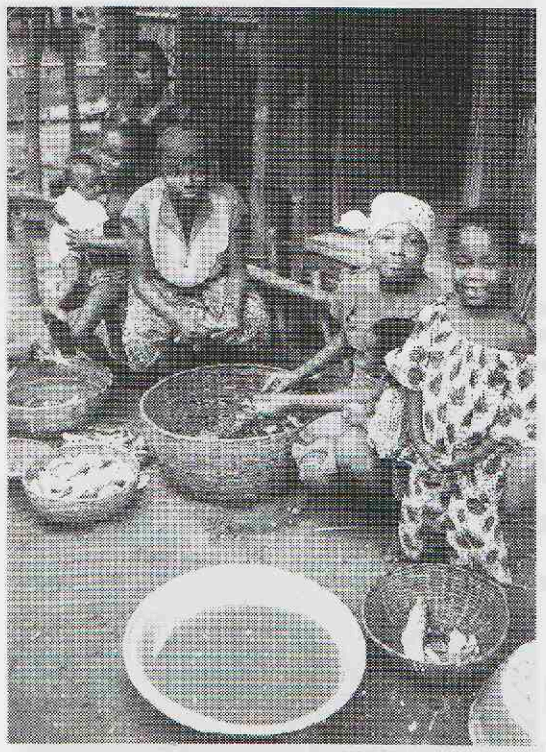
De UNB, de enige universiteit van het land, werd opgericht in 1970 en telt diverse faculteiten met thans in totaal ongeveer 20.000 studenten en 800 stafleden. De landbouwfaculteit heeft zo'n 150 studenten met een jaarlijkse instroom van 30-40. De totale studieduur is 5 jaar: 3,5 jaar "tronc commun" (een soort basisopleiding), gevolgd door 1,5 jaar specialisatie.
Er zijn vijf specialisatie-mogelijkheden; één daarvan is sinds 1984: Voeding en Levensmiddelentechnologie, of in een Beninees jasje gestoken: 'Agro-Nutrition'. In deze nieuwe richting studeren jaarlijks ongeveer 5 ingenieurs af die zich door de keuze van het onderwerp van hun afstudeeronderzoek (inclusief het schrijven van een these staan hier 9 maanden studietijd voor) profileren in de richting van de humane voeding of de levensmiddelentechnologie.

Ondersteuning vanuit Utrecht

Het oprichten van een duurzame nieuwe studierichting houdt een veelvoud aan taken in. Zo was de vakgroep Voedingsmiddelen van Dierlijke Oorsprong, in casu de sectie Technologie nauw betrokken bij en soms de uitvoerder van:

* het formuleren van een nieuw curriculum;
* het inrichten en verbeteren van de infrastructuur van een drietal laboratoria behorende tot de Sectie NSA (Nutrition et Sciences Agro-alimentaires) van de UNB;
* het aanvankelijk verzorgen -en na het inwerken van een Beninees staflid- participeren in het onderwijs op het gebied van de levensmiddelenmicrobiologie; en eenzelfde input op het gebied van de technologie van voedingsmiddelen van dierlijke oorsprong;
* het opleiden van jonge stafleden en ondersteunend personeel;
* het helpen opstarten en mede begeleiden van een onderzoeksprogramma voor de nieuwe sectie;

Dr. Hounhouigan (UNB) en Dr. Houben (UU) bij het in kaart brengen van de situatie rond 'street foods' (foto: collectie Houben)



Vis is een belangrijk voedingsmiddel in Benin. Maar hoe staat het met de hygiëne? (foto: Houben)

* het selecteren en begeleiden van twee langverbanders 'Levensmiddelentechnologie' (afgestudeerd in levensmiddelentechnologie aan de LUW), die respectievelijk voor 5 en 2 jaar in Benin werden gedetacheerd. De eerste langverbander Ir. W. Hendriks was DGIS-suppletiedeskundige, de volgende, Ir. M.J. Edema was in dienst van het project en aangesteld bij de Universiteit Utrecht.

Personele inzet

Als projectverantwoordelijke vanuit Utrecht verbleef ik een en soms twee keer per jaar in Benin. De duur van mijn missies varieerde van 10-25 dagen. In de langere periodes verzorgde ik de jaarlijks practica. De kortere periodes hadden, afgezien van het geven van onderwijs en begeleiden van onderzoek, meer een beleidskarakter. Een tweede belangrijke persoon vanuit Utrecht voor het project was de hoofdtechnicus Michiel Dijkstra, verbonden aan het Bureau Internationale Contacten van de Faculteit Diergeneeskunde. Hij voerde vier ondersteunende missies van 3-7 weken uit naar Benin. Zijn taken hadden betrekking op advisering bij aanschaf, reparatie en onderhoud van laboratoriumapparaten ter plaatse, het verbeteren van de infra-structuur in de laboratoria en het trainen van lokale technici in gebruik, beheer en onderhoud van apparatuur.

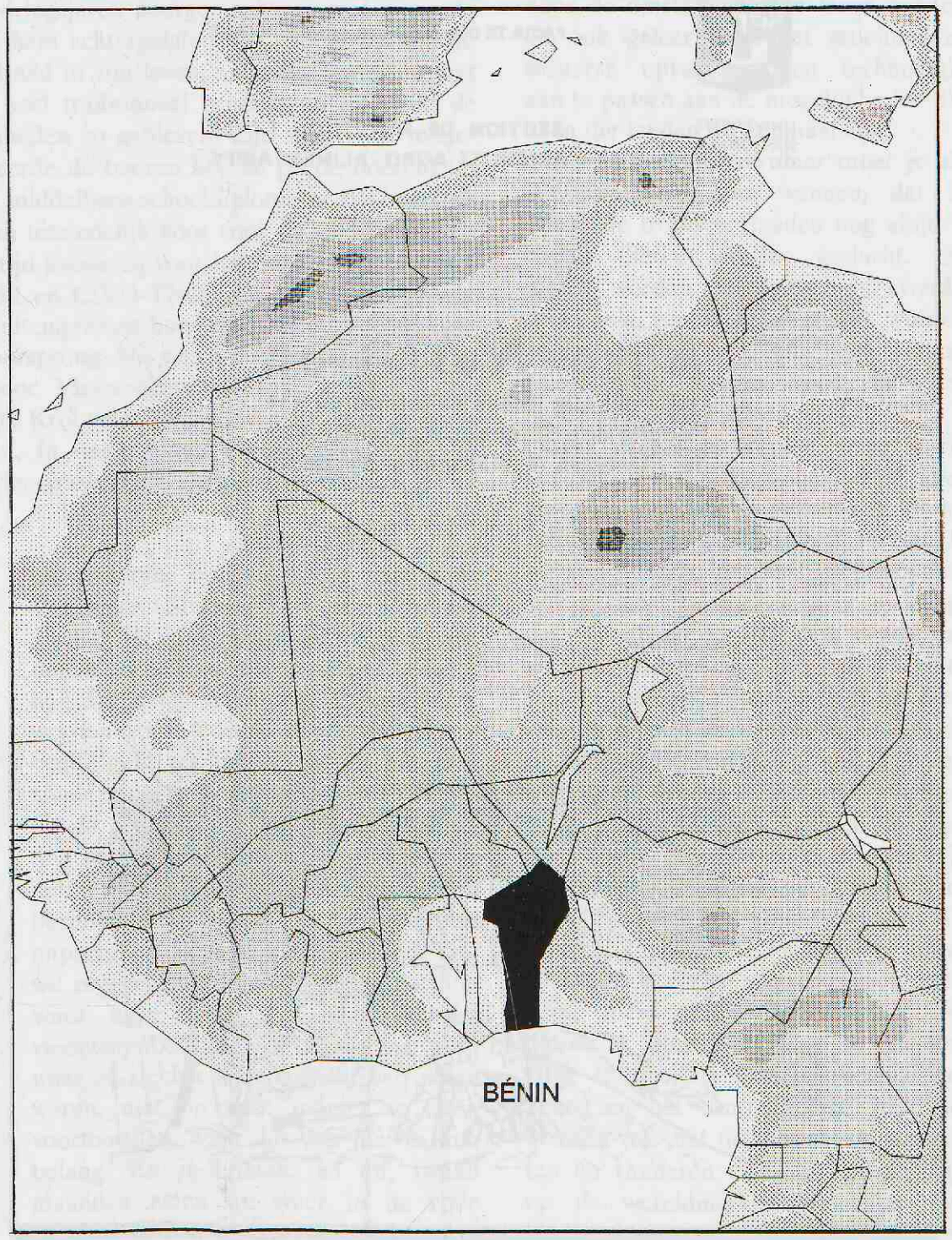
Een derde persoon uit Utrecht die in dit kader moet worden genoemd is Prof. Ir. B. Krol. Hij heeft het project vanuit Nederland mee begeleid en na een TNO-projectbezoek in Ghana is hij "overgewipt" naar Benin tijdens een van mijn werkbezoeken. Samen hebben we toen diverse beleidszaken doorgenomen met de autoriteiten van de UNB en ons op de hoogte gesteld van de vorderingen van enige internationale visserij- en visverwerkingsprojecten.
Een niet te verwaarlozen ondersteuning aan het project werd verder gegeven door diverse Wageningse studenten Levensmiddelentechnologie, die gedurende perioden van circa 4 maanden op stage gingen naar Benin.

Resultaten

In de loop van de tien jaar (het project liep af op 31 december 1993) werden alle eerdergenoemde doelstellingen gerealiseerd. Het opleiden van jonge stafleden heeft geleid tot een tweetal proefschriften op levensmiddelengebied die met succes werden verdedigd; één in Wageningen, het tweede in Ibadan (Nigeria). Technici werden bijgeschoold in Nederland en een bescheiden onderzoeksprogramma werd opgestart.
Onderzoeksprojecten van langere duur hebben betrekking op gefermenteerde maisprodukten (melkzuurfermentatie), gefermenteerde legumineusen (schimmelfermentaties) en traditionele conservering van vis en melk (Peulh kaas). Een poging vanuit Utrecht om financiële middelen via de Europese Unie te verkrijgen om een onderzoekssamenwerking met Benin op te zetten op het gebied van "Aliments de rue (Street foods)" is vooralsnog niet succesvol verlopen.

Een blik vooruit

De ondersteuning van de Landbouw-



faculteit door de Beninese overheid blijkt niet voldoende om deze instelling op de lange duur te doen beklijven. Naarstig wordt daarom gezocht naar andere bronnen van inkomsten, waaraan ook door het project is meegeholpen. Zo kunnen worden genoemd:

* het jaarlijks organiseren van een Franstalige internationale bijscholingscursus van 4 weken voor hoger en middenkader afkomstig uit de regio, de zogenaamde FINSA cursus, die tot nu toe erg succesvol is gebleken. Als cursusthema voor de eerstkomende jaren is gekozen voor 'Sécurité Alimentaire et Santé Maternelle et Infantile', waarin zowel bijdragen op het gebied van de voeding als de levensmiddelenwetenschappen worden geïntegreerd.
* het streven om gevorderde landbouwstudenten uit de regio te laten instromen in het Beninese curriculum, hetgeen in variërende mate blijkt te lukken
* het meehelpen oprichten van een bureau aan de Landbouwfaculteit voor het aantrekken van contractonderzoek.

Op het gebied van de laboratoria van de sectie NSA wordt overigens reeds een bescheiden groei bij het uitvoeren van opdrachten tegen betaling waargenomen.

En toen kwamen er verkiezingen in Benin... (foto: Houben)

Conclusie

Een punt van zorg blijft dat afgestudeerden op dit moment nauwelijks of niet aan een baan binnen de nationale economie kunnen komen, afgezien van aanstellingen bij internationale (hulp)-organisaties.

Vooralsnog blijft ondersteuning, zoals die vanuit Nederland, onontbeerlijk. Zo verblijft er nog in het kader van het Après-project een Nederlandse langverbander in Benin. Zijn taak heeft vooral betrekking op het assisteren bij het verbeteren van het algemene management en het financiële beheer van de Landbouwfaculteit. Vanuit Utrecht zijn voor 1995/1996 nog missies gepland voor Michiel Dijkstra en mijzelf.

Het geheel overziend kan ik stellen dat er duidelijk voortgang is geboekt en dat de toekomst voor de nieuwe studierichting -zij het met enige aarzelingredelijk optimistisch tegemoet kan worden gezien.

Dr. Ir. Jacques Houben

REPUBLIQUE POPULAIRE DU BENIN

FACULTE DES SCIENCES AGRONOMIQUES

UNIVERSITE NATIONALE DU BENIN

SECTION DE NUTRITION ET DE SCIENCES AGRO-ALIMENTAIRES

Agro-Nutrition

Une nouvelle filière de formation à la Faculté des Sciences Agronomiques de l'Université Nationale du Benin

Aankondiging van de nieuwe opleiding 'Agro-Nutrition'

GOEDE OPLEIDINGEN VORMEN DE BASIS VOOR HET VERBETEREN VAN DE VOEDSELKWALITEIT

Vraaggesprek met Ir. B. Krol, emeritus hoogleraar technologie van voedingsmiddelen van dierlijke oorsprong

Professor B. Krol heeft in Utrecht de oorlogsjaren doorgemaakt, en met name de hongerwinter heeft een diepe indruk bij hem achtergelaten. De gebeurtenissen uit die tijd waren het begin van een rode draad in zijn leven, namelijk contacten met mensen die geïnteresseerd zijn in een heel traditioneel produkt, in dit geval de boerenkaas. Dat is bij al zijn werkzaamheden zo gebleven. Zijn vader was medewerker van de zuivelconsulent en adviseerde de boeren hoe ze goede boerenkaas konden maken. Na het behalen van het middelbare-schooldiploma in 1947 vertrok de jonge Krol naar Wageningen, waar hij uiteindelijk koos voor de studie voedseltechnologie. Tijdens zijn militaire diensttijd kwam hij voor het eerst in contact met de Faculteit Diergeneeskunde in Utrecht en CIVO-TNO, zijn latere werkgevers. Ir. B. Krol werd in 1969 benoemd tot buitengewoon hoogleraar in de Technologie van de voedingsmiddelen van dierlijke oorsprong. Hij was inmiddels al enige jaren hoofd van het Nederlands Centrum voor Vleestechnologie van CIVO-TNO in Zeist. Vanuit deze "dubbelpositie" is Prof. Krol vele jaren actief betrokken geweest bij ontwikkelingssamenwerkingsprojecten. In onderstaand vraaggesprek geeft hij zijn mening over diverse aspecten van vleesverwerking, -hygiëne en technologie in de tropen.

Hoe komt een onderzoeker van CIVO-TNO in de tropen terecht?

Mijn eerste kennismaking met de tropen was in Suriname. Het juiste jaar weet ik niet meer, maar het zal zo ongeveer begin zestiger jaren zijn geweest. Er kwam een verzoek binnen bij TNO om te helpen een op het terrein van het slachthuis in Paramaribo failliet gegaan vleeswarenbedrijf van de grond te krijgen. De toenmalige minister-president van Suriname, Sedney, had van mij gehoord en zodoende ben ik er naartoe gegaan. Met hulp van de daar aanwezige veterinairen en met steun ook vanuit de vakgroep Voedingsmiddelen van Dierlijke Oorsprong, zijn wij erin geslaagd vlees als grondstof te gebruiken voor de bereiding van vleeswaren die ook populair zijn in Suriname, maar die men eigenlijk allemaal importeerde, onder andere vanuit de Verenigde Staten. Dat is bijzonder aardig op gang gekomen, vooral ook omdat de Surinaamse regering bedacht had dat er aandelen uitgegeven konden worden voor ieder die over een klein beetje geld beschikte. Na een half jaar zonder veel tegenwerking lukte het om uit de rode cijfers te komen, maar na nog een paar maanden begon men te merken dat de importeurs zich hadden bezonnen en alsnog de prijzen van importprodukten hadden verlaagd. Dat wil zeggen dat ze accepteerden dat hun winst lager werd om daardoor het vleeswarenbedrijfje in Suriname zelf, waar zij slechts zijdelings bij betrokken waren, niet op deze manier te laten voortbestaan, want dat was niet in hun belang. En inderdaad, na elf, twaalf maanden zaten we weer in de rode cijfers. De produkten van Surinaamse bodem werden niet gekocht, terwijl ze van een uitstekende kwaliteit waren. Het ging om snijworst, boterhamworst, bloedworst, typisch de produkten die ze in Suriname heel veel aten. Ze lieten zelfs rauwe ham uit Amerika komen die ze uitstekend daar in Suriname konden maken. Ik heb dat als een les voor mijn verdere carrière beschouwd. Het is heel triest, maar dit soort dingen gebeurt vandaag de dag nog overal in de wereld. Maar het hoort bij het "spel".

U bent als consultant voor DGIS regelmatig uitgezonden naar ontwikkelingslanden. Het betrof met name de vraag: hoe moeten we slachthuizen opzetten, wat moeten we met het vlees doen, moeten we dat gaan exporteren?

Mijn eerste bezoeken hadden altijd te maken met cursusactiviteiten in de Derde-Wereldlanden zelf. Ik heb daardoor de omstandigheden leren kennen en ook geleerd dat het moeite kost westerse opvattingen en technologie aan te passen aan de mogelijkheden die er in die landen nu eenmaal zijn.
Een voorbeeld is, en daar moet je als Westeuropeaan aan wennen, dat in bijna alle tropische landen nog altijd 's nachts dieren worden geslacht. De dieren worden overdag en 's avonds, verzameld, en na middernacht worden ze geslacht, bij de laagste temperatuur. De volgende morgen wordt dat vlees op de markt verkocht.
Onder andere in Yemen, waar ik op verzoek van DGIS zo'n twaalf keer geweest ben, heb ik gezien dat in dezelfde ruimte waar dieren verzameld werden en ook hun mest deponeerden ook geslacht werd. Als je er in slaagt dat van elkaar te scheiden, vervolgens de slachthandelingen op een correcte manier uitvoert, verdacht bent op dierziekten en wat dies meer zij, daar ook op beoordeelt, dan heb je vlees van een aanzienlijk betere hygiënische kwaliteit beschikbaar. Vervolgens moet dat vlees dan onder toezicht op markten, in ruimten die daarvoor herkenbaar aanwezig zijn, verkocht kunnen worden.
Omdat een goede veterinaire infrastructuur ontbrak moesten in Yemen eerst mensen opgeleid worden om dieren te kunnen slachten en om toezicht te houden. Dat is allemaal gebeurd en het aantrekkelijke voor die mensen was dat de huiden van de geiten en runderen een zeer goede prijs op de wereldmarkt opleverden. We hebben bewust niet voor koeling geko-

Ambachtelijke worstbereiding in een fabriekje in Ghana (foto: Krol)

zen, omdat ruim tien jaar geleden in Yemen energie zeer schaars was en omdat er op de meeste plaatsen niet eens elektriciteit was. Dat is een verschrikkelijk moeilijke beslissing voor een westerse technoloog en toch is het resultaat fantastisch geweest. Het was zelfs zo dat door de bijprodukten, het slachtafval, te verzamelen en daar weer veevoer van te maken en dat als voer voor de dieren te gebruiken, de melkgift in een beperkt aantal jaren merkbaar hoger werd. Dus, aan de ene kant werd meer van het dier benut: de huiden voor leerbewerking en de botten als veevoer en aan de andere kant was het vlees van een betere kwaliteit en werd het onder toezicht verkocht op de markt.

Verkoopt een eigenaar zijn dieren aan het slachthuis, of laat hij ze alleen slachten?

Het dier wordt, net als hier in Nederland, door de eigenaar verkocht. Het is duidelijk dat zo'n slachthuisverantwoordelijke probeert om de kosten die hij maakt er weer uit te krijgen. Ik doel eigenlijk op twee dingen. Ten eerste moet je het geslachte dier netjes uit elkaar halen, en dus zorgen voor opleiding van het personeel. Het afnemen van de huid bijvoorbeeld moet vaktechnisch gebeuren. Je mag er niet in snijden, want dan is die huid veel minder waard. Zo'n opleiding moet georganiseerd worden. Daar is met name in het Yemen-project veel aandacht aan besteed en dat is ook heel succesrijk verlopen.
Ten tweede moet het management goed zijn. Je kunt het wel technisch allemaal voor elkaar hebben, maar als zowel de aankoop als het hele beheer van de middelen (dus ook de beschikbaarheid van reserve-onderdelen) niet deugen, dan bereik je nog niets. Ook dat is in Yemen heel behoorlijk geslaagd.

U hebt aan de wieg gestaan van cursussen in vele landen...

We hebben zo'n 17 jaar interessante cursussen gegeven in Kenya, waaraan ook FAO en WHO officials een bijdrage leverden. "We" dat waren in het begin de vakgroep VVDO, TNO en de Keuringsdiensten, samen met de universiteit in Nairobi. In deze periode kregen mensen uit de regio Oost-Afrika een jaar lang een opleiding om zowel in slachthuizen en op verwerkingsbedrijven, maar ook in restaurants en op markten, de hygiënische kwaliteit, de hoedanigheid van het vlees, de vis en dergelijke te beoordelen. Na afloop kregen de cursisten een diploma.
DGIS financierde dit project en maakte er een regionale activiteit van met om de 2 à 3 jaar een 3 daags symposium. Het heeft een tijd lang perfect gelopen. Maar, geleidelijk zijn de middelen beperkter geworden met de bedoeling dat de Kenyaanse veterinaire en niet-veterinaire autoriteiten de cursus zouden overnemen. Dat is na een paar jaar om alle mogelijke redenen weer in elkaar gezakt, zoals je helaas vaak ziet in ontwikkelingslanden. Ik ben een jaar of 4 geleden weer opnieuw begonnen de contacten te leggen in die regio.
Ook in Ghana ben ik een paar keer geweest om zulke cursussen op te zetten. Uiteindelijk zijn deze cursussen door DGIS gefinancierd, waardoor een beperkt aantal Ghanezen naar Nederland kon komen voor verdere training, om daarna ter plaatse cursussen te geven.
Het waren hygiëne-cursussen. Er werd ook aandacht besteed aan de vraag hoe maak je van vlees en vis goede eindprodukten? Het ging om basale kennis, van het niveau: hoe kun je nou, terwijl je zuinig omgaat met hout, vis roken maar ook zo hygiënisch mogelijk bezig zijn?
Deze cursus is vier jaar lang gegeven, toen was die "budgetperiode" helaas weer om. Er is daarnaast nog een eenvoudige managementcursus geweest, waar wij niet bij betrokken waren, en op het ogenblik staat het weer stil.
Nu het wat beter gaat in Ghana hoop ik dat ik de gelegenheid krijg om in goed overleg met DGIS deze opleiding weer van de grond te krijgen, niet alleen voor de vissector maar ook voor de vleessector.

De Vakgroep VVDO participeert ook in een samenwerkingsverband met de nationale universiteit in Benin

In Benin is het contact gelegd vanuit Wageningen. Men heeft geprobeerd ook in Benin een activiteit te starten waar de voedingscomponent inzat, rekening houdend met de uitkomsten van de cursus in Kenya. We hebben in goed overleg besloten om ons te concentreren op vis, en dan met name de be- en verwerking op een eenvoudige, niet zeer geavanceerde manier. Maar wel weer met aandacht voor de microbiologie en voeding. Het is heel plezierig dat dat inmiddels een groot aantal jaren loopt. Dr. Ir. J.H. Houben van de vakgroep VVDO is de man die als projectleider dat gedeelte vorm en gestalte heeft gegeven. Ook dat project is bezig af te lopen en het "Hoe nu verder?" is aan de orde.
Het project heeft niet zozeer nieuwe produkten als wel gezondere en betere produkten opgeleverd. Men is zich gaan realiseren, en de universiteit houdt daar rekening mee bij de opleiding, dat je van een gezonde grondstof uit moet gaan. Een afwijkende kwaliteit is natuurlijk een afkeuring waard, maar

Verbeterde rookovens voor vis leveren met minder hout toch een hygiënisch produkt (foto: Krol)

zaken die nog wel behandeld kunnen worden, waar nog een goed eindprodukt van gemaakt kan worden, die moet je daarvoor benutten.

Ziet u überhaupt nog een mogelijkheid voor zo'n arm land als Benin bijvoorbeeld om dit soort cursussen te financieren?

Houben en ik kwamen tot de conclusie dat we dat zeker de eerste jaren nog maar moeten vergeten. Benin behoort gelukkig nog wel tot de landen waar het Nederlandse ontwikkelingsbeleid steun aan wil geven. En er zijn zo nu en dan weer positieve ontwikkelingen, ook vanuit andere landen. Natuurlijk Frankrijk, maar ook Canada heeft daar een rol gespeeld en speelt nog altijd een rol. We hoeven het echt niet helemaal alleen te doen, maar het blijft een moeilijke situatie in Benin.

De cursussen die we elk jaar in Wageningen geven op het gebied van technologie en kwaliteit bevatten ook een vleescomponent. De cursisten uit Aziatische en Afrikaanse landen komen zich soms ook bij TNO in Zeist en Wageningen, en bij de vakgroep VVDO daarop oriënteren voor kortere of langere tijd. Centraal staan de uitgangsvoorwaarden waaraan de grondstof moet voldoen. Deze cursussen zijn als het ware ook een kadervorming op academisch of HBO-niveau. Het aankomend kader wordt in 5 maanden getraind in alle facetten van kwaliteit en management, maar ook de vleescomponent wordt erbij betrokken. En ja, het is natuurlijk duidelijk dat je je daarbij als cursusleider of althans voorzitter van de begeleidingscommissie, moet realiseren dat het voor die landen niet alleen gaat om vlees en vis, maar ook om de andere, plantaardige produkten. Daar hebben we een aardige balans voor gevonden en de studenten gaan tijdens hun verblijf dan ook een paar dagen naar bedrijven toe. Enfin, het is nu het 5e jaar dat we die cursus van 5 maanden geven, die grotendeels betaald wordt door DGIS, maar voor een deel ook door bedrijven of door de overheid in eigen land en ik beschouw dat als een heel interessante aanvulling op wat ze via andere kanalen krijgen.

In de tropen zie je op veel plaatsen kleine stalletjes langs de weg. Daar hangt dan bijvoorbeeld een half varken te koop dat in de pekel is gezet...

Dat is natuurlijk nog een ander punt. We hadden in Indonesië echt een heel aardige opzet bedacht voor een zogenaamd *street food* project. Inmiddels is zo'n project ook in Thailand opgestart. In Indonesië is het niet afgemaakt omdat de President besloot dat het niet nodig was te profiteren van de Nederlandse middelen. Het project was geconcentreerd in Bogor en er waren in belangrijke mate ook Indonesiërs, inclusief studenten, bij betrokken, maar ook medewerkers van TNO en studenten uit Wageningen.
Het was de bedoeling om de condities te leren kennen waaronder het op een verantwoorde manier mogelijk moet zijn op straat voedsel te kopen van plantaardige of dierlijke oorsprong. En, zo blijkt ook uit sociologisch onderzoek, iedereen van rijk tot arm koopt elke dag produkten op straat. Er zijn er zelfs bij die het uitsluitend van het straatvoedsel moeten hebben. We hebben tijdens ons onderzoek een aantal risico-elementen aangetroffen, zoals ongewenste bacteriën, een hoog gehalte aan bestrijdingsmiddelen of lood. We hebben nog andere ongerechtigheden ontdekt. We hebben geprobeerd door training en voorlichting daar een richting aan te geven. Enfin, het project was net over de helft toen het gestopt moest worden, helaas.

Levert een dergelijk project ook resultaten op?

Tot de overheid toe was men erg geinteresseerd. Met name in Bogor is er een modelproject van gemaakt. Er waren straten, daar mocht men geen straatvoedsel verkopen tenzij men van de schaduw gebruik maakte. Zo waren er meer oplossingen bedacht, echt lokaal bedacht, naast toezicht op produktie en presentatie. En dat was natuurlijk ook ons streven. Wij kunnen wel iets verzinnen, maar het moet ook gerealiseerd kunnen worden in die landen. Het *street food* project beschouw ik eigenlijk als een van de interessantste projecten, het is een goed perspectief voor de eenvoudige man om aan voedsel te komen. Maar nogmaals, ook de rijke man eet dat produkt. En ik vind het toch wel aardig dat in Thailand, en ook in Ghana waar men zeer geïnteresseerd is in dit onderwerp, een poging ondernomen wordt om een bijdrage te leveren aan de verbetering van de kwaliteit van die produkten die men dagelijks eet. Men realiseert zich het probleem.

En dan kom ik weer terug op wat ik al eerder heb gezegd. De gewoonte in die landen is nog altijd dat je 's morgens vroeg je vlees koopt. Dat kook je tot je het consumeert en je houdt dan niets over. Ondanks langdurig koken levert het in ieder geval voldoende eiwitten op. Dat een aantal van de nuttige vitaminen niet meer in die mate aanwezig is, is dan heel spijtig. Maar het verklaart wel waarom er toch weinig voedselvergiftiging voorkomt. Bovendien, als het vlees stinkt of erg verkleurd is, nemen ze het ook niet meer. Dat verklaart dat het eigenlijk nog zo lang zo

goed gaat, maar het kan nog veel beter. Daarvoor heb je echter voorzieningen als koeling nodig. Ik geloof dat de koeling geleidelijk ook een meer bereikbaarder technologie aan het worden is. Er wordt aan de Technische Universiteit in Delft bijvoorbeeld gewerkt aan apparatuur op basis van zonne-energie. En overcapaciteit aan goedkope energie die door een stuwmeer geproduceerd wordt, kan benut worden om ijs te maken. Daarmee blijft vis vanaf de vangst langere tijd van uitstekende kwaliteit en kan verder weg verkocht worden. Maar de produkten zijn dan wat duurder en als de mensen door betere ontwikkeling ook in staat zijn om meer geld te verdienen, dan kunnen ze het ook betalen. En dat is de mooiste filosofie die je voor die mensen kunt bedenken. Dat iedereen in staat is voldoende te verdienen om een beter produkt te kunnen betalen.

De vakgroep VVDO draagt ook bij aan de Tropencursus...

Ja, dat doe ik graag. Wat kan de technologie bijdragen aan het verbeteren van omstandigheden in de tropen? Nou, dan vertel ik mijn ervaringen. De hoofdlijnen en de lessen die in het verleden geleerd zijn, geef je dan door, al dan niet via aanschouwelijk onderwijs. Ik heb het altijd heel nuttig gevonden voor zich oriënterende veterinaire studenten. Er zijn zeker perspectieven voor mensen die de Tropencursus volgen, alleen mijn vakgebied kun je nooit in enkele uren behandelen. Maar naarmate de ontwikkeling van de derde wereld doorgaat - het sterkste voorbeeld dat ik ken is de situatie in Thailand, maar in Indonesië en Maleisië is iets dergelijks aan de gang - denk ik dat een veterinair een nuttige rol kan spelen. Dat kun je naar mijn mening het beste doen als overheidsfunctionaris of in een groot bedrijf. Dan gaat het natuurlijk niet om tientallen veterinairen. En Nederland is niet het enige land dat veterinairen of Wageningse technologen voor dat doel beschikbaar kan stellen. Er is de afgelopen 20 jaar toch wel wat in beweging gekomen. Maar ging het nou maar ietsje beter in Afrika, dan konden nog meer mensen deze rol spelen!

In de loop van de tijd is er veel middenkader opgeleid via de cursussen die u hebt georganiseerd...

Ja, precies, middenkaderopleidingen zouden nog wat meer de kans moeten krijgen om dit soort initiatieven en ontwikkelingen te ondersteunen, want voor dergelijke functies heb je geen hooggekwalificeerde academici nodig. Maar voor het te voeren beleid en de omschakeling op nieuwe technologieën, en ook voor het hele warenwettelijke vleeskeuringstoezicht, daar heb je modern opgeleide veterinairen voor nodig.

En je kunt je afvragen of die landen die dergelijk mensen niet of nauwelijks ter beschikking hebben weer moeten beginnen met de traditionele opzet van de keuring. Moet je niet tegelijk vertellen dat er de laatste 10 jaar in het westen een nieuwe benadering gevolgd wordt die het misschien nog makkelijker maakt om dat toezicht uit te oefenen tegen wat minder kosten? Nou, in die overgangsfase verkeren we nu.
De keurmeesters in Nederland zijn zeer ervaren en praktische mensen, die zou ik eigenlijk graag als voorlopers sturen naar de landen waar meer aan het toezicht en de be- en verwerking van de grondstof gedaan wordt. Zij moeten dan gevolgd worden door een aantal goed opgeleide veterinairen, die hetzij in het toezicht, hetzij in de be- en verwerking hun kansen krijgen. De organisatoren van de keurmeestersopleiding weten dat de mensen in die landen zeer geïnteresseerd zijn in de nieuwste ontwikkelingen, maar dat je daar geen theoretische verhalen moet houden. Aan de andere kant, de veterinaire student moet zich realiseren dat hij met zijn opleiding daar wel een nuttige bijdrage kan leveren. Het integrale ketenbeleid is een heel duidelijk voorbeeld dat het niet stopt bij de boerderij.

Je kan een integrale ketenbewaking wel propageren, maar als je geen controle hebt op wat de veehoeders met hun vee doen, dan houdt het wel op.

Het houdt niet op. Die veehoeders horen het natuurlijk niet van ons, die moeten het horen van hun eigen landgenoten. Denk aan de cursus in Kenya die daarvoor bedoeld is. Kijk, dat vlees werd vroeger toch nooit veel verder dan de eigen omgeving gegeten. Maar als landen kans zien om het vlees ook nog te verkopen - ik hoop niet dat het ten nadele is van de voedselconsumptie van de eigen bevolking, dat is dan ook weer zo'n afweging - dan moet iedereen zich realiseren dat de ontvangende landen steeds kritischer worden. Maar als het vlees voldoet aan de eisen dan willen die er ook best voor betalen. En dat is weer goed voor de economie van het exporterende land. Nou, dat verhaal, aan de veehoeders in Kenya, dat kan geen Nederlander geven. Maar de keurmeesters van ons gaan het wel vertellen aan de Kenyaanse keurmeesters en die kunnen het aan hun landgenoten vertellen. Of in Zimbabwe, of noem maar op. Men moet het niet als een luxe zien, maar als een basisvoorwaarde voor de economie van zo'n land en ook voor de veiligheid van de grondstof.

U huilt niet mee in het koor van de wolven dat ontwikkelingssamenwerking geen zin heeft?

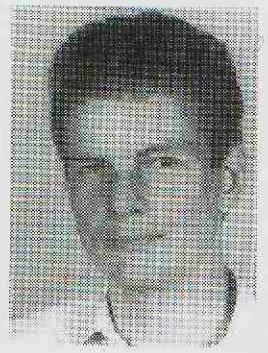
Drogen is de traditionele manier van visconservering in de tropen (foto: Krol)

Integendeel. Nog altijd gaat naar schatting 20 tot 25 procent van alle geproduceerde agrarische produkten verloren. De FAO is al lang bezig om een deel van die grote verliezen te beperken. De verliezen zijn nu teruggebracht van 30 naar 20 procent of daaromtrent, niemand weet het exact, maar in die orde van grootte is het wel. Dat betekent dat je 10 procent meer voedsel beschikbaar hebt dat toch al geproduceerd werd, maar door onzorgvuldige behandeling en opslag niet bij de consument terecht kwam. Als we dat nu nog verder reduceren naar 10 procent dan ben ik een gelukkig mens. Maar dat heeft alles te maken met techniek, met technologie, dat heeft te maken met discipline van de keten. Het heeft zelfs te maken met economische ontwikkeling waarvan je mag hopen dat die zich in die landen zal voordoen, zodat ze de extra inspanningen, die beloond moeten worden, ook kunnen betalen.

Dus ik behoor tot de mensen die zeggen: voor een groot aantal landen is het bij zoveel dat nog verloren gaat en met zoveel lieden die te weinig voedsel krijgen een must om met ontwikkelingssamenwerking door te gaan. En ja, dan vind ik dat 0,8 procent van het bruto nationaal produkt dat wordt besteed aan ontwikkelingshulp ook in Nederland beter dan 0,7 procent. Als ik zie wat wij hier allemaal verspillen en wat wij ons kunnen permitteren, dan vind ik het gewoon absurd dat we hier nog zo lang over praten. En dan is het beter om met financiële middelen ter plaatse steun te geven dan al die mensen maar weer naar het westen te halen. Nee, wij hebben goed naar ze te luisteren en moeten goed om ons heen kijken, omdat je bepaalde zaken die je denkt daar te moeten doen, gewoon niet kunt doen. Dat kan zijn vanwege een religie of een gewoonte die daar eeuwenlang heeft bestaan, of vanwege het klimaat. Dat kun je je beter ter plekke bekijken dan dat je het hier in Nederland vanuit een boekje moet doen.

Jean de Gooijer

EVEN VOORSTELLEN



René van Weeren is het nieuwe redactielid van EQUATOR. Paul René van Weeren werd geboren op 17 mei 1957 te Rotterdam. Na het behalen van zijn Gymnasium-ß diploma begon hij in 1975 aan de studie Diergeneeskunde te Utrecht. Het kandidaats- en doctoraalexamen legde René respectievelijk in de jaren 1977 en 1979 *cum laude* af. Na het volgen van het keuze-coschap de Tropencursus in 1981 werkte hij in het laatste stadium van de opleiding gedurende zes maanden op de "Empresa Agro-Pecuária de Chagalane" te Changalane, Moçambique. Waarna hij actief werd in de Stichting FAVAM; een groep van Nederlandse dierenartsen die zich in zet voor de collega's in Moçambique.

Het dierenartsexamen werd in mei 1983 "cum laude" behaald. Van 1 juli 1983 tot 1 augustus 1991 was René van Weeren verbonden aan de Vakgroep Algemene Heelkunde en Heelkunde der Grote Huisdieren van de Faculteit Diergeneeskunde te Utrecht. Op 2 november 1989 verdedigde hij met succes zijn proefschrift, getiteld "Skin Displacement in Equine Kinematic Gait Analysis".

Tijdens deze periode bij de Faculteit waren de bijdragen van René aan het Faculteitsnieuws in de humoristische rubriek 'Paultje Piggelmee' pennevruchten waar veel lezers naar uit keken. Ook zijn realistische reisbeschrijvingen zullen enkele zich nog wel herinneren.

Van oktober 1991 tot november 1993 werkte René aan de "Catédra de Clínica" van de Escuela de Medicina Veterinaria van de Universidad Nacional (UNA) te Heredia (Costa Rica) binnen het samenwerkingsverband tussen de Universiteit Utrecht en de UNA. Gedurende deze periode legde hij zich, naast het klinisch werk, vooral toe op de verbetering van het onderwijsmateriaal.

Vanaf 1 november 1993 is René van Weeren wederom verbonden aan de Vakgroep Algemene Heelkunde en Heelkunde der Grote Huisdieren, waar hij zich, naast de klinische werkzaamheden, richt op het opstarten van nieuw orthopedisch onderzoek (artrose-problematiek bij het paard) en het verwerven van fondsen ten bate van het wetenschappelijk onderzoek.

In 1991 is hij charter-member geworden van het European College of Veterinary Surgeons (ECVS). In 1994 legde hij het examen van het ECVS met succes af en kreeg daardoor de diplomate-status. René is verder nog lid van de Groep Paardenpractici van de Koninklijke Nederlandse Maatschappij voor Diergeneeskunde, van de American Association of Equine Practioners (AAEP) en van de Asociación Costaricense de Médicos Veterinarios Practicantes en Equinos (ACOMVEPE).

AGENDA 1995

Berlin, Germany
April - July, 1995.
Short term courses in Tropical Veterinary Epidemiology. Module I (18 April - 5 May, 1995): Introduction to computers and orientation to statistics. Module II (8 May - 2 June, 1995): Introduction to epidemiology and applied statistics. Module III (3 - 28 July, 1995): Quantitative epidemiology and advanced medical statistics for epidemiology. Information: Free University of Berlin, Postgraduate Studies in Tropical Veterinary Medicine, Augustrasse 37, 12203 Berlin (Tel: +49.30.8348413, telefax: +49.30.8341908).

San José, Costa Rica
8 - 12 May, 1995.
3rd Biennial meeting of the Society for Tropical Veterinary Medicine (STVM). Symposia: (1) Vector-borne pathogens: challenges for the 21st century; (2) International trade and animal diseases; and (3) General sessions: Contributed papers on Tropical veterinary medicine. Registration fee us$ 250.00. Registration: Dr. J. A. House, STVM-95 Chairman, USDA Aphis Faddl, Box 848, Greenport, NY 11944, USA (Tel.: +1.516.3232500 ext. 350, telefax: +1.516.3232798).

Kruger National Park, South Africa
4-10 June and 6-12 August, 1995.
Two courses 'Wildlife Capture Course for Veterinary Surgeons' are organized in the Kruger National Park by veterinarians from the Price Forbes Chair in Wildlife, University of Pretoria and the National Parks Board. Training and practical experience in the capture of a variety of free-ranging species including elephant, lion, buffalo and antelope. Costs £ 650.00. Information: tel.: +27.12.5298077, telefax: +27.12.5298312. Maximum 10 participants.

Barneveld, the Netherlands
19 June - 7 July, 1995.
2nd Course on: Artificial insemination in pigs. Subjects: Collection of semen; Evaluation and processing of semen in the laboratory; Insemination and sow production control; Organization of an AI station and Selection of breeding stock. Fees including board and lodging: 6,500. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.3420.-14881, telefax: +31.3420.92813).

Utrecht, the Netherlands
19 - 30 June, 1995.
Intensive course on Laboratory Animal Science. Objective of the course: to present basic facts and principles that are essential for the humane use of animals and for the quality of research. Subjects: gnotobiology; animal welfare, euthanasia; statistics; biology and husbandry of laboratory animals; laboratory animal science databases (PREX); protocols for experiments; behaviour, housing, stress and well being; anaesthesia; genetic standardization; N.M.R. facility; microsurgery; animal handling; alternatives to animal experiments; ethics; nutrition; legislation and regulations and practical training. Fees: course fee Dfl. 2,550; board and lodging Dfl. 1,950. Closing date: 1 May, 1995. Information and registration: Mrs. M. Albers, Dep. of Laboratory Animal Science, Faculty of Veterinary Medicine, P.O. Box 80.166, 3508 TD Utrecht (Tel.: +31.30.-532033, telefax: +31.30.537997).

Wageningen, the Netherlands
20 August - 24 November, 1995.
23th International course on dairy farming in rural development. Course programme: Introduction; Dairy development; Farming systems; Statistics; Economics and agricultural credit; Breeding; Pasture production; Nutrition and feeding: Animal health; Reproduction and AI, Extension and case studies. Course fee: Dfl. 4,500. Closing date: 1 May, 1995. Information and registration: International Agricultural Centre (IAC), P.O. Box 88, 6700 AB Wageningen (Tel.: +31.8370.90111, telefax: +31.8370.18552).

Deventer, the Netherlands
21 August, 1995 - 6 June, 1996.
International course on "Tropical Animal Production. Organized by: Larenstein International Agricultural College Deventer. Entry requirements: Diploma or degree in Animal Science and minimal 5 years relevant professional experience. Programme: Integrated approach to feed production, nutrition and reproduction of farm animals; management of farms and farm units; farm economics and extension approaches; farming systems analysis; rapid rural appraisal and an international excursion. The approach is problem-oriented to enhance the problem solving capacity of the participants. Tuition fee: Dfl. 9,675; Board and lodging: Dfl.17,000. Information and registration: Registry Larenstein I.A.C., P.O. Box 7, 7400 DA Deventer (Tel.: +31.5700.84654, telefax: 31.5700.84608).

Barneveld, the Netherlands
23 August 1995 - 22 February, 1996.
25th International course on poultry husbandry and 25th International course on pig husbandry. These courses will run at the same time. Following these courses participation is possible in the 18th International animal feed training programme, which runs from 25 February to 24 May, 1996. Direct entry in this last course is also possible. Fees including board and lodging: Poultry course: Dfl 24,500; Pig course: Dfl. 24,500, Feed course; Dfl. 12,000 or 14,500 (direct entry). Closing date: 1 May, 1995. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.-3420.14881, telefax: +31.3420.92813).

Berg-en-Dal, Kruger National Park, South Africa
28 August - 1 September, 1995.
The Second international conference on tick-borne pathogens at the host-vector interface (THOI); Tick-host-pathogen interactions: A global perspective. Organized by: Onderstepoort Veterinary Institute and Medical University of South Africa. The goal of the conference is to create a forum to review the current status on the biology and ecology of ticks and tick-borne animal pathogens, especially those of Africa. A 4-day post conference workshop on ticks and tick-borne disease identification and diagnostics is envisaged at Onderstepoort under the auspices of the Office International des epizooties. Information and registration: Ms. T. Wilhelmi, Onderstepoort Veterinary Institute, Private Bag X05, Onderstepoort 0110, Rep. of South Africa (Tel. +27.12.5299329, telefax: +27-.12.556573, E-mail: tamara@moon.ovi.ac.za).

Yokohama, Japan
3-9 September, 1995.
World Veterinary Congress. XXV Congress of the World Veterinary Association and XX Congress of the World Small Animal Veterinary Association. Theme: Advancing Veterinary Profession in a Changing World. For inquiries regarding a request for the first announcement and registration procedures contact: The Secretariat WVC, c/o Sankei Convention, Sankei Building 10F, 1-7-2, Otemachi, Chiyoda-ku, Tokyo 100 (Tel.: +81.3.32732084, telefax: +81.3.32732439).

Berlin, Germany
25-29 September, 1995.
8th International Conference of Institutes of Tropical Veterinary Medicine: Livestock production and diseases in the tropics: Livestock production and human welfare. Organized by: Association of Institutions of tropical Veterinary Medicine (AITVM). Programma: Plenary sessions with papers of invited speakers and six workshops introduced by brief communications and posters on: Peri-urban livestock production; Epidemiology and socio-economics in different livestock systems; Impact of livestock on the environment; Veterinary public health in different livestock systems; The role of women in animal husbandry and Target oriented training needs, demands and facilities in less developed countries. For registration and submission of brief communications: Prof. Dr. D. Mehlitz, Institute for Parasitology and Tropical Veterinary Medicine, Free University of Berlin, Koeningsweg, 14163 Berlin.

EQUATOR

VOLUME 7, NO.3 NEWSLETTER ON VETERINARY ASPECTS OF INTERNATIONAL DEVELOPMENT COOPERATION

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May, 1995

from the editor

Veterinary scientists whose field of research or interests lies within the tropics have busy times in 1995. The 3rd biennial meeting of the Society for Tropical Veterinary Medicine (STVM) has just ended in San José, Costa Rica and already those who want to stay in touch with the latest developments in the control of tsetse and trypanosomiasis have to start preparing for the 23rd biennial Meeting of the ISCTRC (International Scientific Council for Trypanosomiasis Research and Control of the Organization of African Unity) in Banjul, The Gambia. This conference, which takes place in September, 1995, just proceeds the 8th International Conference of the AITVM (Association of Institutes of Tropical Veterinary Medicine). The triennial AITVM conference will this year be held during the last week of September in Berlin, Germany.

In between these important international meetings the scientists in the European Union (EU) are faced with the unexpectedly early closing date of June 15, 1995 for the new EU programme for support of research in collaboration with developing countries. Partners are being sought; proposals are being written, commented on and re-written; and more rumours about 'how to increase the chances for success' are circulating, the closer we approach the 15th of June. This EU programme for International Cooperation (INCO) offers possibilities for collaborative research projects as well as support for networks.

One could get the impression that the scientific community for research on tropical animal health is quite numerous. However, compared to the ever increasing demand for animal protein in the world this is unfortunately not the case. Funds for research and scientific education are becoming more and more difficult to obtain. The fact that in 1995 three important international meetings on tropical animal health can take place is the result of utmost efforts of a small number of very dedicated and enthusiastic individuals.

Time has come to join hands!

STVM, ISCTRC and AITVM have so much in common that a serious effort should be undertaken to identify the objectives, strengths and weaknesses of each of the organizations and come-up with one 'world veterinary association for research and education in the tropics'.
STVM has a strong history in basic research on vector-borne parasites, linked to field application in mainly Latin America. ISCTRC is concentrated on tsetse and trypanosomiasis research in Africa in collaboration with some international, European and American institutes. The AITVM places, in addition to research on animal health, emphasis on training needs, while livestock production is put into the socio-economic context. AITVM member institutions of are mainly based in Europe and Asia.

By joining hands worldwide, funds for the organization of international conferences, for the development of a system of data basis for exchange of information via Internet and for research as well as scholarships, can be more adequately used. Which may induce donors to be more forthcoming. And for example the heavy task of organizing regular international meetings may than be divided over more

persons as less, but may be, larger international meetings will be required.

Will the first step towards a **'World veterinary association for research and education in the tropics'** be taken in September in Berlin? The editorial board of EQUATOR is certainly prepared to play a role in the development of a communication system between future members of such an association.

YOU NEED TO HAVE AN ANTENNA!

In February 1995, Jean de Gooijer, one of the editors of EQUATOR, happened to be in Berlin, Germany. He took the opportunity to talk to Prof. Dr. Dieter Mehlitz and Dr. Susanne Münstermann who are responsible for the postgraduate courses in tropical veterinary medicine and epidemiology at Faculty of Veterinary Medicine of the Free University in Berlin.

Mehlitz: Our institute is part of the Faculty of Veterinary Medicine of the Free University Berlin. After the reunification of Germany, all of a sudden we had two faculties of veterinary medicine in Berlin, of course this is to much. After a lot of palaver and big negotiations the officials came to the conclusion that both faculties had to fuse. The next step was: "Where should it be located?" Should this faculty be connected to the old Humboldt University in East Berlin, or should it be connected to the Free University. Not so long ago came the decision: for 5 years the faculty should be connected to the Free University. I am not going into details about all the difficulties, but you can imagine what sort of difficulties are still there because of the historical background. Within this Faculty of Veterinary Medicine there is the Institute of Parasitology and Tropical Veterinary Medicine. Within this institute there is the Department Tropical Veterinary Medicine and Epidemiology. This "and Epidemiology" was added about 3 years ago because we thought - and that was a general feeling - that the analytical epidemiology should have a very special place within tropical veterinary medicine. We have epidemiologists working here, which makes the department quite an efficient unit. But the whole set-up of tropical veterinary medicine is within the Institute of Parasitology and Tropical Veterinary Medicine. The postgraduate studies are basically connected directly to the Faculty. But, as all the staff and the expertise are within the Institute and our Department, also to the Institute. I think we want to keep this situation as long as possible, because parasitology and tropical veterinary medicine was quite an efficient combination during the last 30 - 35 years, not only in Berlin but in Holland and other places too. We try very hard not to separate this unit because if tropical veterinary medicine is going to be separated, there is the danger that it will not be strong enough for the competition with all the other disciplines, which will lead to a shortage of money. We have to keep this combined and strong institute.

We have 5 permanent scientific staff members in the Institute, in the Department of Tropical Veterinary Medicine we have 4 permanent staff and 2 scientific staff members on soft money for the postgraduate studies and 2 colleagues working in our research unit in Uganda. This is actually not too bad.

Is there a general education for German veterinary students who want to have a job in the tropics?

Mehlitz: More than 30 years ago the Seminar for Tropical Veterinary Medicine was established at the Free University together with the socalled Research Unit, which was situated in tropical countries. During this time there was quite a lot of demand from outside, people who wanted to go to the tropics in the frame of development aid or technical cooperation. Until now about 357 students got their postgraduate training. Most of them were Germans, but since about 1972 also people from developing countries who qualified as a veterinarian in Germany came for further training in tropical aspects under the so-called reactivation programme.

At present the situation is a bit difficult. The demand from tropical countries for getting young people from the

Prof. Mehlitz and Dr. Münstermann are responsible for the postgraduate training in tropical veterinary medicine at the Free University Berlin (Photo: De Gooijer)

so-called developed world, especially from Germany, is not as it was years ago. Young people know about this situation and we have to get some sort of new system going, we have to establish some sort of postgraduate studies, which are more focussed on the needs which are expressed in, for instance, Africa. We have to move from the more traditional tropical veterinary medicine to epidemiology and animal health management. We hope that the demand from outside for training and the demand for jobs will increase during the next years.
What we actually do is to let the newly qualified people know that we here in Berlin have a new system, which leads into the special fields of dairy or animal health management.

Another thing we try to change is the qualification. The former certificate is now a diploma. The students get a degree which is actually recognized by the university. So, 1995 is the first year in which we start a diploma course, which is the continuation of the old seminar for tropical veterinary medicine.

Münstermann: Our institute, the Department for Tropical Veterinary Medicine offers postgraduate training for German veterinarians, this is what Prof. Mehlitz was talking about, but we also offer postgraduate training courses for veterinarians from abroad. This activity started in 1989. We offer a Master course programme for veterinarians with at least 3 years of professional working experience in developing countries in particular working field areas.
The first Master course focussed on "Veterinary public health and meat hygiene", while the second course was on "Epidemiology and preventive veterinary medicine". We have decided to continue this programme and will start our third course in April, 1995 and again train 16 veterinarians from abroad coming from 11 different countries. As the postgraduate veterinary training programme is a unit by itself in the institute, we now try to combine the training for the German group and the veterinarians from abroad by matching the subjects which are common to both courses. Nevertheless, the main topics for both groups differ because, as Prof. Mehlitz already explained, the diploma course is focussing on animal health management and the master course on epidemiology and preventive veterinary medicine.

Coming to the courses themselves: the diploma course for German veterinarians is now planned to run for 11 months. The first 5 months is the course work part, with as main topics "tropical animal diseases complex", "epidemiology", "animal health management" and "economics", which we consider very important in this context and which has not really been considered in the previous certificate courses. This part will be followed by examinations on the main subjects. Thereafter the students, or rather the veterinarians, will prepare their project work, which consequently they will carry out, do the on the ground research work, for three months in a developing country.
We offer them certain topics, which we think fit the subject. As I already said, they do their preparation here and subsequently go alone or in groups of two to a project, mainly German development projects, and they stay there for three months to carry out their research. Thereafter they come back and they finish by writing a thesis. The manuscript will be corrected and marked, and consequently they have to defend their thesis.

The Master course is running almost parallel to the diploma course for the first 5 months. After this period we offer the students different optional short term courses. They can select either "laboratory diagnostics" or "food technology/food hygiene" or "herd health management". This is because they come from different backgrounds and different working fields, it is a good chance for them to specialize, within the course, in a certain topic. Again, they will have oral examinations on the main subjects of the course, thereafter they have a period of three months to prepare the project work, which is already part of the Master thesis work. It means that they have to familiarize with the subject they have to work on. Consequently, they do research work at different institutes in Berlin, not only at our institute, for 8 months. The students suggest topics and we try to find a suitable working place for them where they can follow their own ideas. Alternatively, they can bring their own field data, on which they did research at home, and we will help them here to analyze these data and find a teacher to work it out. Well, again they have about 2 months time to write it all up and to sit for an oral defence of their thesis. All in all it takes 16 months and it is preceeded by a 2 months language course, because the participants need some basic German, just for "surviving".

What are the perspectives for the graduates once they get their diploma?

Mehlitz: You come right to the critical point. I think we are still in some sort of depression. The last 2,3 years it was very difficult for young people to get jobs overseas. I can say, this is a feeling which I cannot prove, that we are coming out of this depression right now. The whole situation regarding animal production in the tropics was under review and criticism and now it is coming out of this situation a little bit. I think that within the next 2 to 4 years, animal production within the big context of improving agricultural systems in the tropics will have better prospects for the future. By providing these courses we look forward to this situation. I think that the prospects for the young people to get jobs overseas will be better. But still there is a big problem. The young people get a good course and a good diploma and a good knowledge on relevant topics for their work in the field or in the institutes, but they are still young people. They have no experience yet. If you look at the advertisements coming from FAO, WHO and other international organizations, they all look for people with 5 years, 6 years, 8 years experience. To get involved is extremely difficult. There is no good mechanism to get a good start for young people. We have to continue negotiating with the governments so that they recognize this problem. If they do not realize it now, within the next 5 - 10 years the expertise we have got and will get in the future will somehow disappear. This is a critical point and we have to work on this.

Münstermann: We did upgrade the former "Tropenseminar", focussing on the needs of potential job donors, which in our context has been in the past and will be GTZ, the German development cooperation agency. They supported the upgrading of the course to a degree level very strongly. They pointed out what the real need is for young experts who can start working for example as a GTZ project assistant. Usually this is where they start their

career. As Professor Mehlitz said: To get them in this small niche, and their are not many jobs, one has to train people according to the demands of those jobs. We have switched the course focus from a more or less broad tropical animal disease approach to very specialized subjects.

Do you have an explanation for this development?

Mehlitz: Part of the answer you got already. Nowadays there is quite a number of good veterinarians in developing countries. Look at the universities in Africa with a veterinary curriculum. Look at Kenya, look at Harare and other universities, there are many, many young veterinarians who just wait to do their job. This actually is quite different from the situation of 20 years ago. Then, there were not enough qualified veterinarians in Africa or Asia. Of course, there were much more jobs in this period for general veterinary practitioners. There were many Europeans going in. Now this niche has gone and local vets are working there. This is a very good situation, it is what we want and we should not have bad feelings about this, that our people can not get a job. As you heard, we have to focus on something else. We are now in a period of development. We have to tell the organizations, whether national or international agricultural research centers, that we have people here who received a very special training to meet the demands which have now the highest priority in the new system regarding agricultural research in tropical veterinary medicine, not only research but development. I think this is most important.

Is there a conflict of interests between educating the people from developing countries and German people who want to work in a developing country?

Münstermann: No, there is no conflict at all. Foreign students come to Germany when they already have a position. They have what we call a career position in a ministry or a research institute. These positions will definitely never be occupied by Germans, so there is no conflict. On the contrary, it is very useful because these people in training can become counterparts in a concrete working situation.

Mehlitz: You can not see the situation from the national point of view anymore. Most of the projects are now financed by Brussels. They launch a tender and everybody can apply. The national organizations which are in competition have their own people in the background, their experts or people they think are experts. There is of course a competition in the European context and this is a quite healthy development. Therefore it is absolutely necessary that the institutions who are dealing with tropical veterinary medicine or agriculture in general in Europe come together - and they do that already - to discuss there problems and try to design projects or postgraduate training. Such a joint effort is very difficult, because of language and different interests, but we are under way. Maisons Alfort and Edinburgh already have joint courses. They try to exchange some modules. We should come to the situation where the European institutions dealing with postgraduate training or research should come together more often, to identify their strength. They can exchange their specialized know-how and in the end the best quality will come out of this approach.

I would like to add another point which I consider very important, not only for research but especially for training. Our feeling is that you can not develop a good training programme if you do not have your ongoing experience regarding current research. That is to say, you have to have an antenna, a place where you actually work in the tropics, where you get a continuous input. Therefore we are very happy to have a research unit in Uganda, where two of our colleagues are working together with their counterparts at the Makerere University. Of course, nowadays it is very difficult due to financial constraints, but we try to keep this going. Especially the postgraduate students from the diploma course meet their counterparts there to have a workshop on special fields of epidemiology. They can discuss their results and their approach. I think this is very important. You know, you need to have your playground, a place where the diseases are actually occurring.

Do they also have the possibility to perform research at your field station?

Yes, there are 2 programmes. One programme is with the Ugandan National Research System. It is on trypanosomiasis and the significance of chemoresistance of trypanosomiasis in the peri-urban livestock production around Kampala. The other project is a joint venture with ILRI, the former ILRAD and ILCA, and is situated more in the western part of the country. It is a programme on on-farm research on the significance of calf mortality in dairy production. We still seek for funds from the European Union. The call for project proposals is just coming out and we are in competition with many, many, many others. So, we do not know what comes out of it.

The participants in the 1994 Master course (Courtesy: Free University Berlin)

Tropical animal health and production at the Faculty of Veterinary Medicine in Utrecht

Utrecht University, one of the 14 universities in the Netherlands, includes 14 faculties. Its Faculty of Veterinary Medicine is the only veterinary faculty in the Netherlands and, as a result of its scientific and educational standards, it has been accredited by the American and Canadian Veterinary Medical Associations since 1973. Within the Faculty there are 11 departments. Research on tropical animal health is mainly conducted by the Department of Infectious Diseases and Immunology, but other departments are also actively involved in collaborative research in e.g. Zimbabwe, Benin, Costa Rica and Mozambique.

In 1987 the Faculty Office for International Cooperation started with the coordination and extension of the international activities. In 1989 the "Committee for the Advancement of Tropical veterinary Science (CATS) was established at the Faculty. The main objective of CATS is the perpetuation and promotion of research and education relevant to the tropics. The organization of the Symposia on **Tropical Animal Health and Production** is an activity of BIC and CATS. From 1990 onwards a yearly symposium has been organized.

1990: **Contributions and perspectives from the Faculty of Vete- rinary Medicine, Utrecht University**
1991: **Research for development: policies, priorities and options**
1992: **Bovine theileriosis**
1993: **Recent developments in veterinary epidemiology**
1994: **Application of biotechnology**

For further information please contact:
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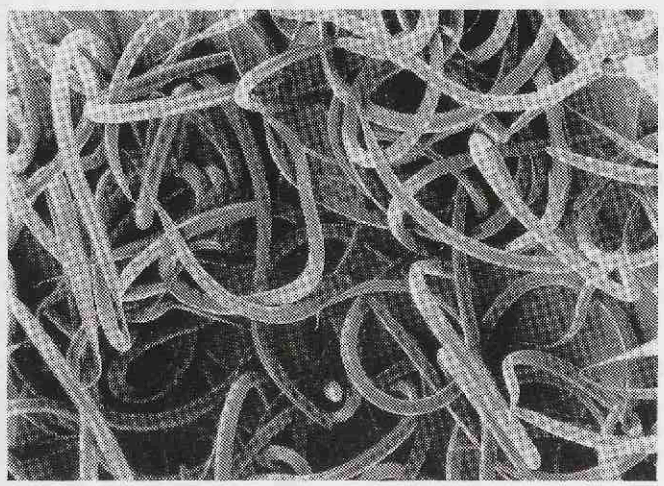
Faculty of Veterinary Medicine
P.O. Box 80.163, 3508 TD Utrecht, The Netherlands.
Tel.: +31.30.532116, Telefax: +31.30.531815
E-mail: bic@bic.dgk.ruu.nl

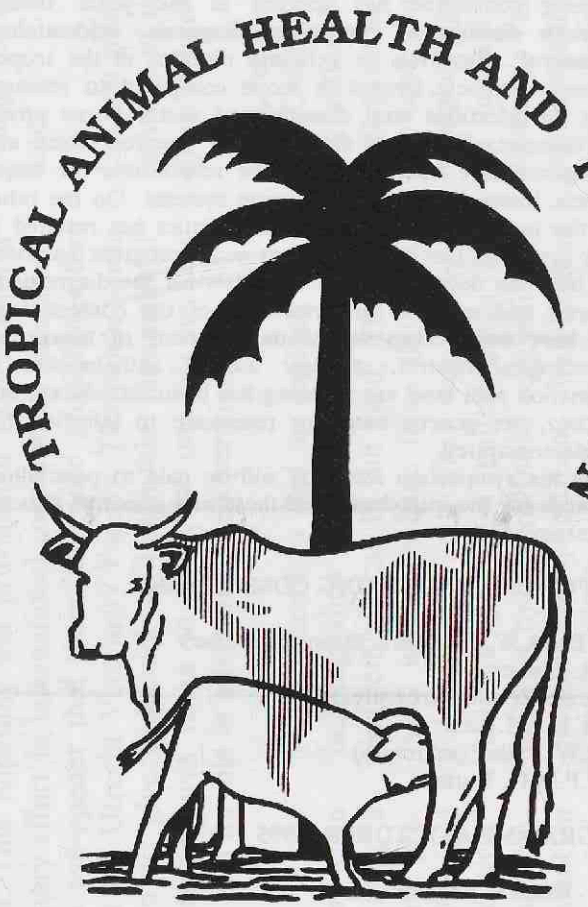


Courtesy: Van Vorstenbosch/Van Dijk

Universiteit Utrecht

6 OCTOBER 1995

6th SYMPOSIUM ON



Helminth diseases of ruminants: diagnosis, epidemiology and control

Time: 09.00 - 16.00 hours
Location: Faculty of Veterinary Medicine
Yalelaan 1, De Uithof, Utrecht
The Netherlands

6th Symposium on

TROPICAL ANIMAL HEALTH AND PRODUCTION

Helminth diseases of ruminants: diagnosis, epidemiology and control

In 1995 the Faculty of Veterinary Medicine organizes the 6th symposium on **Tropical Animal Health and Production**. The organizing committee has selected as this years' theme: **"Helminth diseases of ruminants: diagnosis, epidemiology and control"**. Research on helminth diseases in the tropics has been relatively limited in scope compared to research efforts on infectious viral diseases and vector borne protozoan diseases. However, diseases like haemonchiosis and ostertagiosis have been shown to be responsible for major economic losses in certain production systems. On the other hand the indiscriminate use of anthelmintics has resulted in severe drug resistance. Over recent years progress has been made with the development of new tests for the diagnosis of helminths and with the understanding of the epidemiology. Steps have been taken in the development of means for immunological control, strategic use of anthelmintics in combination with land use planning has been introduced, and moreover, the genetic basis for resistance to infection has been demonstrated.
During the symposium attention will be paid to possibilities and needs for the introduction of these new concepts into the tropical areas.

SYMPOSIUM ORGANIZING COMMITTEE

Prof. Dr. A.W.C.A. Cornelissen (chairman)
Dr. M. Eysker
J.H.A. de Gooijer (treasurer)
Drs. T.J.G.M. Lam
Dr. R.W. Paling (secretary)
Dr. V.P.M.G. Rutten

PROGRAMME 6 OCTOBER, 1995

08.30 - 09.00 h. Registration

First morning session: Opening

Part 1: **General aspects of control**

Helminth control in tropical countries: need, strategies and benefits.
J.W. Hansen (Food and Agriculture Organization, Rome, Italy).

Current status of helminth infections in West Africa.
S.N. Chiejina (University of Nigeria, Nsukku, Nigeria).

Part 2: **Diagnosis and immunization**

Value of present diagnostic methods.
M. Eysker (Utrecht University, Utrecht, The Netherlands).

Second morning session:

Recent developments towards immuno-diagnosis and immunization against *Haemonchus.*
H.D.F.H. Schallig and *M.A.W. van Leeuwen* (Utrecht University, Utrecht, The Netherlands) and *D.Z. Moyo* (University of Zimbabwe, Harare, Zimbabwe).

Part 3: **Interactions between helminth infections and the environment**

Design and test of a strategic anthelmintic control scheme in African village cattle.
J. Zinsstag (Centre Suisse de Recherches Scientifiques, Abijan, Ivory Coast), *Ph. Ankers, L. Dempfle* and *M. Njie* (International Trypanotolerance Centre, Banjul, The Gambia), *J. Kaufmann* (University of Bern, Bern, Switzerland), *P. Itty* (ETH Zentrum SOL, Zurich, Switzerland) and *K. Pfister* (Labor Pfister, Bern, Switzerland).

Interactions between helminth infections and nutrition in sheep.
R.L. Coop (Moredun Research Institute, Edinburgh, United Kingdom).

First afternoon session:

Part 4: **Genetic resistance against helminth infections**

General aspects of genetic resistance against helminth infections in sheep.
M.J. Stear (University of Glasgow, Glasgow, United Kingdom)

Genetic resistance against helminth infections in cattle, sheep and goats in the tropics.
L. Baker (International Livestock Research Institute, Nairobi, Kenya)

Second afternoon session:

Part 5: **Epidemiology, prevention and economic aspects**

The epidemiology and control of gastrointestinal nematodes of sheep in Nyandarua district of Kenya.
N. Maingi, S.M. Thamsborg, W.K. Munyua, J.M. Gathuma and *P. Nansen* (University of Nairobi, Nairobi, Kenya and Danish Center for Experimental Parasitology, Copenhagen, Danmark).

Control of nematodes in goats in the wet tropics.
P. Dorny (Prince Leopold Institute of Tropical Medicine, Antwerp, Belgium), *C. Symoens* (Brussels, Belgium) and *J. Vercruysse* (University of Gent, Gent, Belgium).

Epidemiology and control of schistosomiosis in cattle.
J. de Bont (Zambian-Belgium Veterinary project, University of Zambia, Lusaka, Zambia) and *J. Vercruysse* (University of Gent, Gent, Belgium).

Epilogue and closing

REGISTRATION FORM

I wish to attend the 6th Symposium "Tropical Animal Health and Production. Helminth diseases of ruminants: diagnosis, epidemiology and control" on 6 October, 1995 at the Faculty of Veterinary Medicine, De Uithof, Utrecht.

Registration is free, but please check box for lunch reservation.

☐ * I wish to reserve lunch (Dfl. 15,- to be paid at the registration desk)

☐ I do not wish to reserve

* check one box

Name:.....

Institute: .....

.....

Address: .....

Postal code: ..... City: .....

Country: .....

Tel.: .....Telefax: .....

Date: .....

Signature: .....

Please forward **before 15 September, 1995** to:

Office for International Cooperation
Faculty of Veterinary Medicine
P.O. Box 80.163
3508 TD Utrecht
the Netherlands.
Telefax: +31.30.531815
E-mail: bic@bic.dgk.ruu.nl

The future....

Münstermann: We thought in the long run it would make more sense to offer students the possibility to carry out research work in the field on topics which are really connected to their home country situation. Rather than to offer all of them a research topic here in Berlin, which sometimes is a bit theoretical. For instance, brucellosis is not a topic in Germany any more, but many of our students want to do research on this disease. We really have to dig in old files, but for them it is of highest importance. Their interest and what we can offer in certain cases do not match. We started to think along the line of interuniversity collaboration. We have different partners with whom we discussed how to structure and offer such a course, to be carried out by 2 universities and eventually, after negotiations with different partners we came out with the proposal, which is now accepted by the donor, through GTZ, to carry out a split programme with the University of Addis Abeba in Ethiopia. It is now in the process of development, contracts still have to be signed, but it is in the pipeline and we are very optimistic to get it off the ground very well. Everybody is very enthusiastic about it. We will start next year. The principle is that over a period of 2 years students will come to do their course work part, as well as preparing the research period then they will go to the faculty in Ethiopia for one year, or in the countryside there, in one of the collaborating institutions. There is already a long list of potential collaborating institutions. We now have the chance to offer a very good Master course in which the students gain a lot of expertise. We already have a lot of international expertise through cooperation with other universities and institutions and there again we have the chance to international collaboration through former ILCA, now ILRI and the University of Nairobi. We are also thinking of a research period mainly to take place there, plus some additional workshops or seminars.
If the students do not want to do applied field research, but rather high-tec laboratory research which can not be done at their home institutions we can offer the facilities. For the students this situation will be much better than it is now, because they can choose.
It is promised that this project round will be for six years, so we can organize 3 Master courses. During this period we will look for other international donors, and I estimate this to be rather easy.

Mehlitz: What makes this concept attractive to the donor is that they see that part of the activities go to the developing countries. Hopefully in the end all the activities will be taken over. This is actually what the donors want to see, sustainability.

Jean de Gooijer

LARENSTEIN INTERNATIONAL AGRICULTURAL COLLEGE

Believe it or not, the Faculty of Veterinary Medicine in Utrecht is not the only institution in The Netherlands that has contacts in the veterinary field with developing countries. It seemed a good idea to the editorial board of EQUATOR to widen our view and to focus from time to time on other institutions that are working in closely related fields. This hopefully will provide our readers with a better view on the Dutch veterinary effort in international cooperation. Moreover, for some readers it may be an eye-opener that there are more possibilities for work than just those offered via the Utrecht Veterinary Faculty. Therefore, when one of our editors was invited to give a lecture at Larenstein International Agricultural College, the opportunity was taken to interview one of the vets working there about the College and its role in international cooperation.

On the way to Deventer

The weather was almost tropical when I set out for a trip to Deventer, a middle-sized city in the eastern province of Gelderland. I had been invited by Bert Bosch to give a lecture to 4th year students about the use of computers in herd health management in Costa Rica. Bert worked for some time abroad and is now a teacher at Larenstein International Agricultural College. I was pleased to find an ancient, brick building when I drove through the gate and left my car in the yard. This certainly was a heritage from the Dutch colonial past and, what was more, it had not yet been pulled down and replaced by one of those very efficient, practical, easy-to-clean, well-isolated and dreadfully ugly and impersonal glass and steel constructions that are considered to be the highlights of our present day civilization.
Bert confirmed this when I commented on it in his tiny office, hidden in one of the reconstructed attics of the building.

"Certainly, the college was created early this century. Our BSc program in Tropical Agriculture started for instance in 1912 as a training programme for estate managers in the former colonies. But please, don't ask me too much about history. I am working here for almost three years now and I am happy to have a good idea by now of how the College is functioning at the present time."

Can you give me a quick overview of the activities of the College, focusing on the efforts in international cooperation?

"Well, let me first say something about the College as a whole. Larenstein International Agricultural College as it is at present is the result of a merger that took place in 1988 of four schools of higher agricultural education. From the original locations of Wageningen, Boskoop, Velp and Deventer the latter two remained. It was decided that Velp, where a new building was constructed, would be the main location and that the old buildings here in De-

The entrance of Larenstein International College at Deventer (Photo: Van Weeren)

venter would be restored. Here in Deventer we have about 900 students, divided over three BSc courses: on Temperate Agriculture and Animal Husbandry, focusing mainly on the Dutch situation, on International Agricultural Trade and on Tropical Agriculture. Besides these 4-year BSc courses that are mainly attended by Dutch students, we have five shorter courses for foreign students: on Training in Rural Extension and Teaching, on Women, Extension Workers and Agriculture, on Tropical Animal Production, on Farm Mechanization and on Draught Animal Technology. Lately we started 2 MSc courses."

How long are those short courses for foreign students, how many students participate in each course, what kind of people do attend these courses and who pays for them?

"Let us start with the most interesting question, where do all these people come from. The only right answer is: from all over the world. Nevertheless, traditionally there is always a strong representation from Africa with the emphasis on East Africa: Kenya, Tanzania, Uganda. Each course has 16-20 participants and most of the courses take 10 months. The course on Women, Extension Workers and Agriculture is 8 months and the Draught Animal Technology course is the shortest one. This one takes only 3 months. As far as the financial side of these educational programmes is concerned: most of the students are receiving grants from the Netherlands Ministry of Foreign Affairs. Some are paid by project funds. You will understand that the budget cuts made by this Ministry in The Hague are a great menace to our efforts here."

Do you receive many requests for these courses and what are your criteria for admitting students? Do you have any idea about the results of these courses or, to put it in other words, do you have some feed-back from your graduates?

"We certainly have a lot of people applying for admission. We think it is important that the people that are following these courses will have a position, after returning home, in which they will have the opportunity to spread the knowledge and skills they have obtained. For instance, we would prefer a rural extension worker to a local manager on a middle-scale farm. We are also looking for people that are not too old, in general they must be under 40 years of age, and for people that can use the course for improving their own career. They should also benefit themselves from the course.
Your question about the feed-back is an interesting one. We just have held our second refresher course "on the spot" at the end of last year. This is a new development we always wanted to do, but which had not been approved until recently by the Dutch Directorate-General for International Cooperation (DGIS). The last course was held at Tamale, Ghana, at the Tamale Institute for Cross-Cultural Studies and was attended by alumni from Sierra Leone, The Gambia, Cameroon, Nigeria and Ghana. It was, just like the first course in 1993 at Arusha, Tanzania, a great success. Both staff and students were very enthusiastic and we think this is an excellent form to keep in contact with our ex-students and update their knowledge."

Let us turn towards the regular programme for Dutch students and to your participation in the course. By the way, how did you become involved in the Larenstein teaching programme?

"To answer the last question first: I have worked for Vétérinaires sans Frontières in Afghanistan and when it became a bit too dangerous there I moved to Pakistan, just across the border. After that period I have worked in Yemen and when I came home I could start working here on a temporary basis, because one of the vets working here, Laurens Mol, had set off to a project in Egypt. I had been working abroad in small-scale animal husbandry mostly. As you undoubtedly will know, animal husbandry in those countries has a completely different role in society when compared with the situation here. Over there animal husbandry is part of almost everybody's life as virtually everyone owns some animals. In Holland, and in most parts of Western Europe, animal husbandry is more and more becoming a high-tech branch of agro-business, alien to most people, focusing on enormous yields per animal and offering jobs to only a very limited number of people. I myself do not feel very attracted to that type of animal husbandry and I thought it a good idea to work here for some time as I could keep in touch with my field of interest.
As for the first part of your question, my job is mainly teaching Animal Health, both in the regular programme and in the short-term courses for foreign students we talked about earlier. The regular course in Tropical Agriculture consists of 8 semesters. I participate in all of them, except for the 6th semester, which is a practical

Bert Bosch in the tropical greenhouse at Larenstein (Photo: Van Weeren)

period abroad, but the emphasis is on the last two semesters."

How difficult was it for you to become a teacher here. Did you have to study a lot yourself? Another thing I would like to know is how you are teaching Animal Health. The classic Utrecht way or do you have another approach?

"You guessed right. In the beginning it was pretty hard. As you know, the Utrecht course in Veterinary Medicine in my days did not spend a single hour on teaching capacities and I just had to learn how to teach. Besides, a lot of knowledge that had not been used for quite a while had to be revived. I also had to orientate myself more broadly on animal husbandry, not just only on diseases and disease-related problems, also on management aspects such as fodder crops, grassland management and so on. It took me about a year to get to the level I wanted.
This indirectly also answers the second part of your question. I am certainly not teaching the classic way, only focusing on diseases. The students should learn to acquire insight in the factors causing diseases or other health problems. Almost all health problems are multifactorial and can be influenced by good management. Epidemiology is an important theme and, related with this discipline, the possibilities and impossibilities of various prevention and eradication programmes."

What about the motivation of your students. Do you see differences between Dutch students and the ones from abroad?

"In general, all students are very motivated. It is funny tot see that the type of people is the same as in Utrecht. There also the students attending the course on Tropical Animal Health and Husbandry are somewhat different from the others: more independent, more critical. Here you see the same differences between Tropical Agriculture and the other two BSc courses that are taught here. It is often striking to see the change in mentality that occurs after the practical training period in the tropics during the 6th semester. This period is highly motivating and students certainly do come back more mature than when they left. The foreign students are very motivated. Of course some suffer a dip, mostly somewhere in December, due to problems in adaptation. However, almost all do very well and there is virtually no drop-out during the courses. They are very eager to learn something and they really appreciate the things we can offer them. They do not yet take everything for granted as a lot of the Dutch students do. That is very stimulating for the staff."

It is nice to hear that your students are very motivated, as you yourself clearly are. But what about the Dutch students, is there employment for them after graduation?

"I am sorry to say that that is a very difficult item. It is really hard to get a job in the tropics nowadays when you have just graduated from a College as this one. By the way, that is the same everywhere, it certainly is as difficult for veterinarians who have recently graduated from Utrecht Faculty of Veterinary Medicine."

I do agree, but where do the people go?

"Well, some of them really go to the tropics. Some start in volunteer jobs that are hardly paid to get the experience that is nowadays always required by employers such as the FAO, UN , DGIS (the Dutch Directorate-General for International Cooperation), or other organizations working in this field. Others get local contracts based upon contacts they made during their periods of practical training in the field. As most of the students in Tropical Agriculture can be characterized by a large degree of flexibility, a lot of them find work in other areas. Either in Holland or abroad. There is a growing number that is finding work in the former Soviet-dominated part of Europe. The percentage of jobless students is not greater than that in the course on Temperate Agriculture and Animal Husbandry. Perhaps we need a revision and should the divisions go to one course on International Agriculture and Animal Husbandry, with various disciplines focusing for instance on the Dutch situation, the situation in Eastern Europe and in the tropics."

A last question. What about your personal future? You said the job here was temporary.

"Yes, it is. And though I like the work here, I think that is a good thing as I myself feel too young to stay here indefinitely. I am looking for a possibility in the field. It is there where my main interest lies. I will also get more experience then and maybe one day I will be back teaching. Here, or in another place."

Some more impressions
Larenstein International Agricultural

College is a dynamic institution with a friendly character, very welcoming to foreign people, firmly built on a great tradition but with an open eye to the future. In my feeling the College plays an important and very good role in the Dutch efforts in international cooperation. The input from the veterinary profession is not that large in manpower, but it is essential and of very good quality.
When I drove back to Utrecht that extremely sunny afternoon late in April with the roof of the car open, it really felt a bit like being in the tropics...

René van Weeren

RECENT PUBLICATIONS (17)

The section RECENT PUBLICATIONS is included in the English issues of EQUATOR. Scientific publications of the Faculty of Veterinary Medicine and other research institutes in the Netherlands, relevant to livestock production and health in the tropics as well as titles of papers by Dutch veterinary scientists working on animal health and production topics in relation to developing countries, will be included. Please inform the editor of your publications so we can bring them to the attention of the readers of EQUATOR. For reprints contact the authors directly, their addresses can be obtained from the editorial office (Office for International Cooperation, P.O. Box 80.163, 3508 TD Utrecht, The Netherlands).

ANIMAL HEALTH

Pinelli, E., Killick-Kendrick, R., Wagenaar, J., Bernadina, W., Real, G. del and Ruitenberg, J. (1994). Cellular and humoral immune responses in dogs experimentally and naturally infected with *Leishmania infantum*. Infection and Immunity 62: 229-235.

Uilenberg, G. (1994). Quelques reflexions sur les priorités de recherche en santé animale en Afrique. Revue d'Elevage et de Médecine vétérinaire des Pays Tropicaux 47: 267-270.

Wagenaar, J.A. (1994). Leptospirosis - diagnosis and pathogenesis. PhD thesis, Utrecht University, Utrecht.

Weijkamp, K., Faghihi, S.M., Nijmeijer, S.M., Witkamp, R.F. and Miert, A.S.J.P.A.M. van (1994). Oral bioavailability of sulphamethoxydiazine, sulphathiazole and sulphamoxole in dwarf goats. The Veterinary Quarterly 16: 33-37.

HELMINTH INFECTIONS

Kwa, S.G. (1994). The molecular basis of chemotherapeutic resistance in the parasite nematode *Haemonchus contortus*. PhD thesis, Utrecht University, Utrecht.

LIVESTOCK PRODUCTION

Brand, A., Schukken, Y.H., Goodger, W.J. and Hoogeveen, H. (1994). A dairy herd health and production management protocol for hygienic milk quality. Proceedings XVIII World Buiatrics Congress pp. 177-185.

Dijkhuizen, A.A., Huirne, R.B.M., Jalvingh, A.W. (1994). Economic analysis of animal diseases and their control. Proceedings 7th ISVEE-congress, The Kenya Veterinarian 18: 13-14.

Houben, E.H.P., Dijkhuizen, A.A. and Huirne, R.B.M. (1994). Economic optimalization of decisions on treatment and culling of dairy cows with clinical mastitis. Proceedings 7th ISVEE-congress, The Kenya Veterinarian 18: 436-438.

Schukken, Y.H. and Brand, A. (1994). Health management in herds. Veterinary Research 25: 160-164.

REPRODUCTION

Hesselink, J.W. (1994). Pseudopregnancy in the goat. PhD thesis, Utrecht University, Utrecht.

Kruip, Th.A.M., Boni, R., Wurth, Y.A., Roelofsen, M.W.M. and Pieterse, M.C. (1994). Potential use of ovum pick-up for embryo production and breeding in cattle. Theriogenology 42: 674-684.

TICK-BORNE DISEASES, THEIR AGENTS AND VECTORS

Gueye, A., Jongejan, F., Mbengue, Mb., Diouf, A. and Uilenberg. G. (1994). Essai sur le terrain d'un vaccin atténué contre la cowdriose. Revue d'Elevage et de Médecine vétérinaire des Pays Tropicaux 47: 401-404.

Jongejan, F. (1994). Development and transfer of biotechnological methods for diagnosis of tick-borne pathogens with special reference of *Cowdria ruminantium* and *Theileria annulata*. In: Use of applicable biotechnology methods for diagnosing haemoparasites. Proceedings FAO expert consultation, Merida, Mexico, 1993. pp. 126-135.

Jongejan, F. and Uilenberg, G. (1994). Ticks and control methods. Revue scientifique et technique d'Office international des Epizooties 13: 1201-1226.

Schetters, T. (1995). Vaccine development from a commercial point of view. Proceedings 9th International Veterinary Hemoparasitic Disease Conference, Tick-borne hemoparasitic diseases of livestock. Merida, Mexico. Veterinary Parasitology 57: 267-275.

TSETSE AND TRYPANOSOMIASIS

Rogers, D.J., Hendrickx, G. and Slingenbergh, J.H.W. (1994). Tsetse flies and their control. Revue scientifique et technique d'Office international des Epizooties 13: 1075-1124.

FOR YOUR INFORMATION (1)

Recent Publication:

PLANNING WITH PASTORALISTS: PRA AND MORE. A REVIEW OF METHODS FOCUSED ON AFRICA

This review was commissioned by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ, Germany Agency for Technical Cooperation) as part of its programme on integrated planning of livestock development in marginal areas. This rose out of concern that conventional "participatory" land use planning based on village territories is excluding pastoralists.

Planning with pastoralists: PRA and more by Ann Waters-Bayer and Wolfgang Bayer, gives an overview of participatory approaches and methods for planning pastoral development projects. It contains an annotated and indexed bibliography of over 100 reports on participatory enquiry and planning, a description of rapid methods used in pastoral settings and a critical analysis of experiences with these methods. The annex contains names and addresses of individuals and organisations which are sources of further information about participatory planning methods related to livestock-keeping.

As most of the literature on Participatory Rural Appraisal (PRA) and similar approaches deals with settled crop farmers, GTZ supported a concerted effort to find and analyze experiences, largely in unpublished reports, of participatory situation analysis and planning specifically related to the mobile assets (livestock) of mobile people. The review focuses on Africa, but covers also relevant experiences elsewhere in the world.

This stat-of-the-art review will be of interests to both governmental and non-governmental development agency staff, policy makers and training institutions, particularly but not only in Africa. The English version (pp. 153) appeared in December 1994; the French version is in preparation.

The book can be obtained free of charge form GTZ Division 422, Attn: Annette von Lossau, POB 5180, D-65726 Eschborn, Germany (Fax +49-6196-796103).

VACANCIES INTERNATIONAL COOPERATION

This section contains vacancy announcements which the editorial board considers to be of possible interest to Dutch veterinarians. Besides vacancies that will be taken from Vacatureblad Internationale Samenwerking, Tijdschrift voor Diergeneeskunde, Veterinary Record, Intro vacatures (RPD Advies/ Ministry of Internal Affairs) etc., there will be room for personnel advertisements. For further information about the vacancies please contact the institution or company directly.

Howletts & Port Lympne Wild Animal Parks

PROJECT MANAGER / VETERINARIAN / CONGO - Brazzaville

For gorilla rescue and rehabilitation.

Information:
We are seeking a veterinary graduate for a permanent position as project Manager in the Republic of the Congo. We have a rescue centre based in Brazzaville for young gorillas and a release site in the forest for older animals.

Required:
Ideally, the successful candidate will have: some experience in the tropics; ability to handle five or more expatriate staff and 30 Congolese staff; diplomatic and administrative skills and ability to manage finances. Good or fluent spoken French is essential. Some familiarity with tropical diseases of primates, especially humans, is useful. Ability to work under stressful conditions, including military rule, is a prerequisite.

Conditions:
Remuneration package by negotiation.

Application:
Write to: Chris W. Furley, Veterinary Director, Howletts Wild Animal Park, Bekesbourne Lane, Bekesbourne, Canterbury, Kent CT4 5EL, UK.

(Source: The Veterinary Record April 22, 1995).

CALENDAR 1995-1996

Barneveld, The Netherlands
19 June - 7 July, 1995.
2nd Course on: Artificial insemination in pigs. Subjects: Collection of semen; Evaluation and processing of semen in the laboratory; Insemination and sow production control; Organization of an AI station and Selection of breeding stock. Fees including board and lodging: 6,500. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.3420.-14881, telefax: +31.3420.92813).

Liège, Belgium
26-27 July, 1995.
European Society for Veterinary Virology 'Symposium on IBR and other ruminant Herpesvirus infections'. Information: Prof. E. Thiry, Virology, Faculty of Veterinary Medicine, University of Liège, Sart Tilman B 43 bis, Liège (Telefax: +32.41.664261).

Kruger National Park, South Africa
6-12 August, 1995.
Course 'Wildlife Capture Course for Veterinary Surgeons' are organized in the Kruger National Park by veterinarians from the Price Forbes Chair in Wildlife, University of Pretoria and the National Parks Board. Training and practical experience in the capture of a variety of free-ranging species including elephant, lion, buffalo and antelope. Costs £ 650.00. Information: tel.: +27.-12.5298077, telefax: +27.12.5298312. Maximum 10 participants.

Deventer, The Netherlands
21 August, 1995 - 6 June, 1996.
International course on "Tropical Animal Production. Organized by: Larenstein International Agricultural College Deventer. Entry requirements: Diploma or degree in Animal Science and minimal 5 years relevant professional experience. Programme: Integrated approach to feed production, nutrition and reproduction of farm animals; management of farms and farm units; farm economics and extension approaches; farming systems analysis; rapid rural appraisal and an international excursion. The approach is problem-oriented to enhance the problem solving capacity of the participants. Tuition fee: Dfl. 9,675; Board and lodging: Dfl.17,000. Information and registration: Registry Larenstein I.A.C., P.O. Box 7, 7400 DA Deventer (Tel.: +31.5700.84654, telefax: 31.5700.-84608).

Berg-en-Dal, Kruger National Park, South Africa
28 August - 1 September, 1995.
The Second international conference on tick-borne pathogens at the host-vector interface (THOI); Tick-host-pathogen interactions: A global perspective. Organized by: Onderstepoort Veterinary Institute and Medical University of South Africa. The goal of the conference is to create a forum to review the current status on the biology and ecology of ticks and tick-borne animal pathogens, especially those of Africa. A 4-day post conference workshop on ticks and tick-borne disease identification and diagnostics is envisaged at Onderstepoort under the auspices of the Office International des epizooties. Information and registration: Ms. T. Wilhelmi, Onderstepoort Veterinary Institute, Private Bag X05, Onderstepoort 0110, Rep. of South Africa (Tel. +27.12.5299329, telefax: +27-.12.556573, Email: tamara@moon.ovi.ac.za).

Yokohama, Japan
3-9 September, 1995.
World Veterinary Congress. XXV Congress of the World Veterinary Association and XX Congress of the World Small Animal Veterinary Association. Theme: Advancing Veterinary Profession in a Changing World. For inquiries regarding a request for the first announcement and registration procedures contact: The Secretariat WVC, c/o Sankei Convention, Sankei Building 10F, 1-7-2, Otemachi, Chiyoda-ku, Tokyo 100 (Tel.: +81.3.32732084, telefax: +81.3.32732439).

Yokohama, Japan
3-9 September, 1995.
Symposium of the World Association of Wildlife Veterinarians (concurrent with WVA Congress). Information: Dr. Wilber Amand, Chairman, WAWV, Zoological Society of Philadelphia, 3400 West Girard Avenue, Philadelphia PA 19104-1196, USA.

Berlin, Germany
25-29 September, 1995.
8th International Conference of Institutes of Tropical Veterinary Medicine: Livestock production and diseases in the tropics: Livestock production and human welfare. Organized by: Association of Institutions of tropical Veterinary Medicine (AITVM). Programma: Plenary sessions with papers of invited speakers and six workshops introduced by brief communications and posters on: Peri-urban livestock production; Epidemiology and socio-economics in different livestock systems; Impact of livestock on the environment; Veterinary public health in different livestock systems; The role of women in animal husbandry and Target oriented training needs, demands and facilities in less developed countries. For registration and submission of brief communications: Prof. Dr. D. Mehlitz, Institute for Parasitology and Tropical Veterinary Medicine, Free University of Berlin, Koeningsweg, 14163 Berlin.

Utrecht, The Netherlands
6 October, 1995.
6th International symposium: Tropical Animal Health and Production. Theme: 'Helminth diseases of ruminants: diagnosis, epidemiology and control'. Organized by the Committee for the Advancement of Tropical veterinary Science (CATS) and the Office for International Cooperation of the Faculty of Veterinary Medicine of Utrecht University. Registration before 15 September, 1995: Office for International Cooperation, Faculty of Veterinary Medicine. P.O. Box 80.163, 3508 TD Utrecht (Telefax: +31.30.531815, E-mail bic@bic.dgk.ruu.nl).

Utrecht, The Netherlands
9 October - 24 November, 1995.
5th International Course "Introduction to Herd Health and Epidemiology". Organized by the Office for International Cooperation and the Department of Herd Health and Reproduction of the Faculty of Veterinary Medicine. Programme: Introduction to herd health and the VAMPP-programme for fertility control of dairy cattle; Introduction to veterinary epidemiology; Fertility analysis and aspects of reproduction like gynaecology, animal husbandry, artificial insemination and embryo transfer; claw disorders; Mastitis: diagnosis, epidemiology, therapy and prevention; Calf rearing and nutrition. Course fee: Dfl. 7,500,-. Closing date for registration 1 August, 1995. Information and registration: Office for International Cooperation, P.O. Box 80.163, 3508 TD Utrecht (Tel.: +31.30532116, telefax: +31.30.531815, E-mail: bic@bic.dgk.ruu.nl).

Oenkerk, The Netherlands
15 January - 12 July, 1996
9th International Course on Dairy Husbandry and Milk Processing. Programme: Dairy development, Animal husbandry, Milkprocessing, Dairy production, Teaching and extension, Dairy farm management, Small scale milk processing. Closing date: 1 October 1995. Tuition fees Dfl. 7,100,-. Information and application: IPC Livestock, Dairy Training Centre Friesland, P.O. Box 85, 9062 ZJ Oenkerk (Tel.: +31.5103.61562, telefax: +31.5103.61628).

EQUATOR

VOLUME 7, NO.4/5 NEWSLETTER ON VETERINARY ASPECTS OF INTERNATIONAL DEVELOPMENT COOPERATION

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September, 1995

"MY GREY HAIR IS HALF OF MY QUALITY"

How to improve Veterinary services in Egypt?

Laurens Mol studied veterinary medicine in Utrecht and graduated in 1966. Professor Wilson of the Institute for Tropical and Protozoan Diseases interested a group of students for research on tsetse control in Nigeria. Through him these students - Laurens was one of them - got international contacts, which is quite remarkable in a time only few people were interested in the tropics.
Dr. Mol's first job was in Kenya, as an expert paid by the Netherlands' Ministry of Foreign Affairs. This appointment as an expert was a big surprise. In his own words: "Can you imagine, I just graduated and was green as grass..."
After a long career abroad he returned to the Netherlands and found a job at a milk cooperation in Brabant. There, he realized he could not stand the Dutch mentality anymore, especially the commercial approach and the huge application of veterinary drugs. After a year he got the opportunity to work at Utrecht University's Faculty of Veterinary Medicine, at the Zootechnics Department, which was at the same time his baptism of fire in teaching. This was quite a nasty blow because he found out that teaching was not easy. Just like in Kenya where he was appointed as expert, right after graduation, he was now appointed as a teacher, without any experience in this field. After two years he switched to Deventer Agricultural College where he taught tropical animal husbandry for several years. In 1992 he applied for a position in Egypt. He went there first on a short mission, for project orientation, after which he settled in Dokki for a few years. Now Laurens Mol is back in the Netherlands to talk about his experiences in the Food Sector Development programme.

The position of veterinarians in Egypt

"The past forty years Egypt suffered a lot under the socialist regime. Veterinary services were free of charge, even therapy. Because of this system all the farmers, big and small scale, are spoilt. People with a university diploma were guaranteed of employment. This is a major problem. Egypt has 21,000 veterinarians, of which 16,000 are employed by the government. There are 8 universities where veterinary medicine is taught. The theoretical level varies and most of the students, when graduating, have no practical experience. There are 5,000,000 head of cattle, including buffaloes. Seventy per cent of these are low producing locally kept cattle. The government owns several very big dairy farms where military veterinarians are employed. Of course there is no pig industry and the poultry industry is fully privatised. If you divide the number of head of cattle by the number of veterinarians you will find an outcome that indicates an intensive care system! Of course this is not true, but it is a fact that you need only one tenth of this number of veterinarians. Because they have not much to do, and earn only one fifth of the salary they should earn, you cannot blame them for con-

centrating on "private business". These private businesses cause a cutthroat competition. The big issue is: "How can you make money", because the farmer cannot pay for your services. They make money by selling veterinary drugs. This results in a huge drug supply without "veterinary service". Not totally without, but the service is very limited.

One should realise that drugs are not used in fattening, like in Western Europe, but for all kind of diseases antibiotics are prescribed, without questioning the necessity of the prescription. Until recently the government controlled the drug supply, but many veterinarians have their private clients. To give an example. Last week I was at a farm where they breed guinea fowl and the people found out I was a veterinarian. They had a problem. One of the guinea fowl laid eggs but would not hatch these. The farmer did not ask me to diagnose the problem but asked for a prescription! I explained to the farmer how guinea fowl behave. These birds need free space, which is a prerequisite for reproduction. After adapting the housing the problem would be solved.

The programme

I worked in two projects: the Pan African Rinderpest Campaign (PARC) of which the Director of the Veterinary Service is officially the coordinator, and a livestock project which aimed mainly at small scale farmers. The livestock project employed four professionals: a fodder specialist who works on fodder and animal feed production, a milk hygiene and marketing specialist who is responsible for milk conservation, engineering and processing on a small scale level and the marketing of the dairy products, and a manager who is responsible for the economic management of the project. I am responsible for the animal health, to begin with artificial insemination.

Furthermore there is a programme manager to coordinate the activities described above and an administrator. So, in all we are there with six foreigners for the "Food Sector Development programme".

Beside the livestock component there is a component "Edible oil" and a huge "Credit line". This is a credit system based on privatisation. It is European Union funded. This budget is used for private loans to farmers in the livestock sector. Loans are offered at an acceptable interest rate and under favourable conditions. The project coordinates the activities. Farmers who apply for a loan don't come to us but have to go to a bank, because we do everything together with counterparts. If the "business plan" is economically sound everyone can get a loan, also "big farmers". The bank decides on commercial grounds.

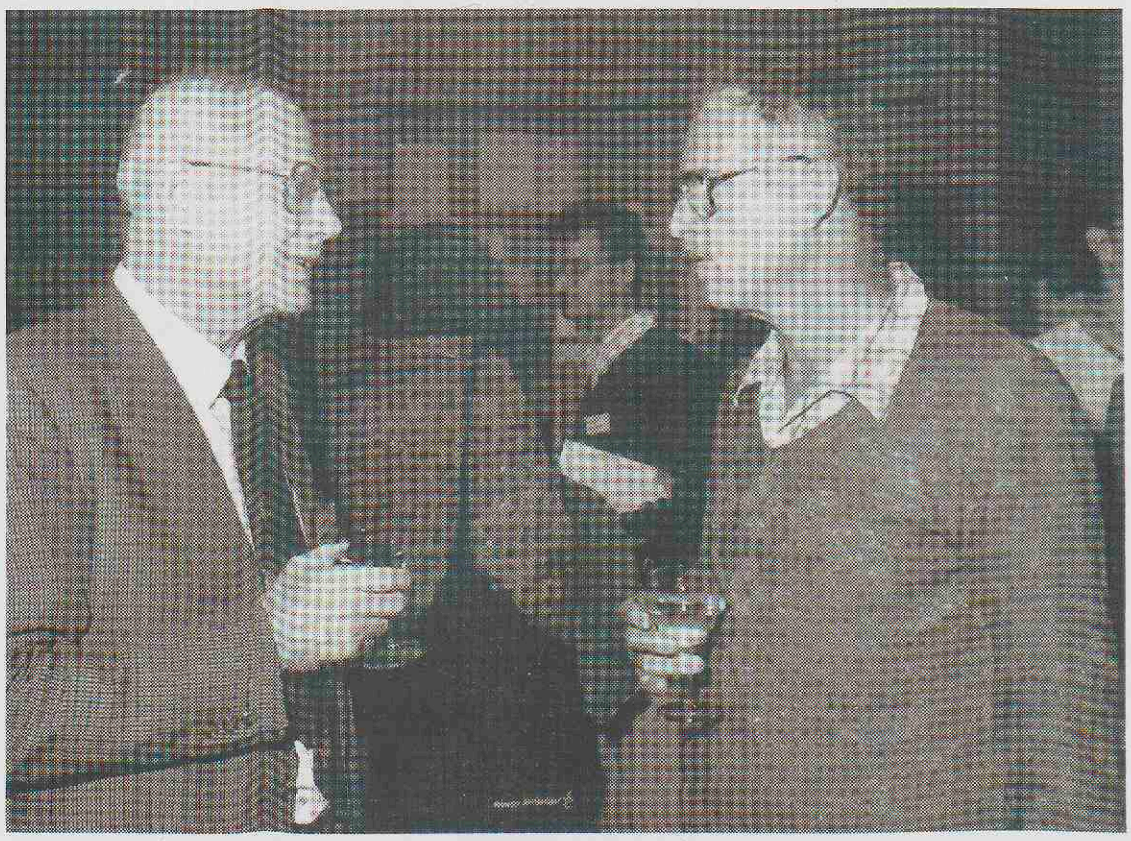
Rinderpest

With the veterinary department we started with rinderpest control. We were able to prove that in all probability there is no rinderpest virus in Egypt anymore. The last case of rinderpest in Egypt was reported in 1986. But according to the story this was a subclinical case. As long as you vaccinate it is impossible to differentiate between immunity due to vaccination and immunity due to infection. Therefore our advice to PARC was to stop the vaccinations. But this is politically impossible. In my opinion we are fighting a ghost, a real ghost. I mean, you see nothing, but people claim its existence.

Because there was nothing to investigate in cattle, we did a survey in sheep, which were never vaccinated. Sheep can be infected by cattle. On the basis of the results of this survey we were not able to demonstrate the existence of the rinderpest virus in sheep. For the third year in a row we advised the director of the veterinary service to stop rinderpest vaccination. Although we could demonstrate that immunity in cattle is high enough to interrupt the virus circulation and that sheep are "virus free", the veterinary service is very afraid something might happen. You can only do two things, either vaccinate properly or stop vaccinating. In my opinion we should stop vaccinating now to see if the virus exists in Egypt. Furthermore if the infection is subclinical there have to be some animals with rinderpest like symptoms. Therefore we organized an information campaign on rinderpest symptoms for veterinarians. We did a clinical survey and found nothing again. So the only reasonable thing to do is to stop vaccinating.

Privatisation and the epidemiology system

One and a half year ago I started to talk about epidemiology, to structure and build an epidemiological unit. I also discussed the fact that the veterinarians had to provide clinical services. To activate the ponderous and ineffective Veterinary Department and restructure the veterinary services you have to reduce the tasks of the department and combine this process with privatisation. The veterinarians have to work on a private basis. But it is impossible to get them out of the veterinary service, no matter what a profitable offer you make them. The vete-



Laurens Mol DVM (right) during his leave in the Netherlands. (Photo: De Gooijer)

rinary service offers them an infrastructure for their sidelines. It took me some time to find that out.

I have requested for an expert to do a study on the subject. Well, the expert came and on the basis of his study we have submitted a proposal to the European Union for the privatisation of veterinary services. The privatisation project consists of an early retirement scheme and a restructuring of veterinary services by gradually reducing the number of activities that in fact belong to the private sector, like artificial insemination and clinical work. The thousands of clinics all over the country have to be privatized. This is a very difficult process and I do not want to be the veterinarian to execute the project, I am more a technician than a diplomate.

Now I would like to talk about the privatisation in the rinderpest and epidemiology programme. I use the rinderpest model to accomplish an infrastructure for epidemiological work. It is my philosophy to start small scale and build up something, rather than to start big. We have divided the central unit in two units: "the epidemiological processing unit" and "the epidemiological field unit". The director of the veterinary service is directly supervising the heads of these units. In ten years time the veterinary department should be an epidemiology unit. All the branches that work in the private sector should be self supporting by then. This will be a gradual process.
We needed a local person in each governorate to provide information and we needed people in the department to process data. At the moment we have provided a basic education to 33 people. The people are selected on mainly two criteria: they have to speak English very well and be under 35 years of age. This was a novelty in Egypt. Another novelty was that we held interviews to select the candidates. We selected 66 people out of 120 candidates. They all took a preliminary course to prepare them for the epidemiology course in Reading in the UK. This two week preliminary course consisted of statistics, economy and an English language course. In the two weeks period we selected the best participants to follow the course in Reading. The participants were very enthusiastic. At the moment we are in the phase of installing a computer in each governorate. There are 27 governorates with each two people, a local processor and a local field man who knows how to design a field survey, how to take samples, how to sample at random. These people require a follow up training. The Egyptians had the illusion that once the staff was educated the project would be ready to start. I advised them to develop an information system first. If you start by collecting data, no matter what subject, you start building a data structure. The local staff becomes experienced in data processing. Perhaps the results will be poor at first, so what? We will not use this material to base economical analyses on, we consider it a finger exercise initially.
It makes me feel good to see what can be reached in one and a half year. I mean, we now have an infrastructure for epidemiological research. This is the first time that I saw such irrevocable results in a project as in Egypt. Of my former projects almost nothing remained.

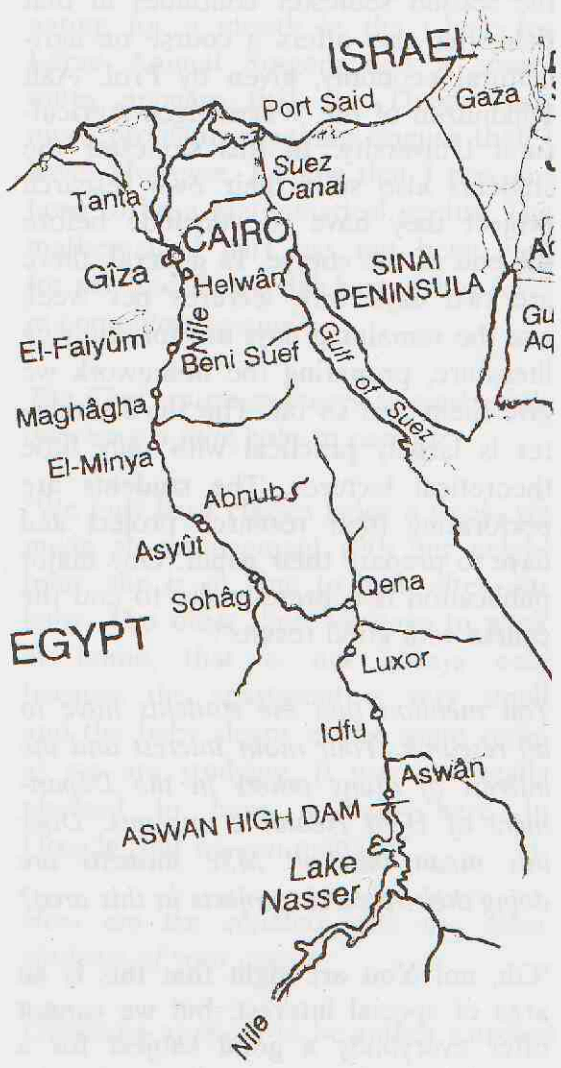
The future

Our aim is to leave a sustainable infrastructure. The project started with 5 target areas. The farmers have to take over ideas we provide. We have no intention to force our ideas on the farmers. If some ideas die out because the farmers are not interested, we leave it to that. We are no missionaries. We only show alternatives. If other possibilities are viable they can go ahead. In the mean time the number of target areas is enlarged to 9. Now, about 40 Egyptian veterinarians work in these target areas in the private artificial insemination sector. These have to inform a "central level", so parallel to the epidemiological system we have to build another veterinary infrastructure. It is important that we evaluate their A.I. results, not in the context of genetical improvement but more to get an idea on efficiency. We still have no basic information on cattle reproduction in Egypt. We require information on the efficiency of the inseminators, but also on the efficiency of the system. The most remarkable difference with the European mentality is that the people here do not think economically. So we try to make them aware of the different aspects of privatisation during workshop like training sessions. You should not expect immediate results. You have to provide a lot of support and follow up. This last aspect also causes some difficulties, because to provide follow up training you need an insight in their results, which they are not always willing to provide.

A lot of veterinary problems could not be tackled. For instance mastitis. I mentioned before the unlimited use of antibiotics. The farmers should be made aware that mastitis is a milking problem. Another thing is claw problems. The farmers do not consider claw problems as problems because they think it is normal. But claw trimming is way beneath the position of a veterinarian. They consider me an idiot when I give a demonstration.

Within but also outside the project we have only good relationships. The German programme manager does an excellent job. This is a project "sans rancune". A factor of influence is of course that all expatriate staff members are old hands. Egypt does not accept junior foreign staff. My grey hair is half of my quality....."

Jean de Gooijer



FOCUS ON THE MASTER OF SCIENCE COURSE IN VETERINARY EPIDEMIOLOGY AND HERD HEALTH

The Master of Science course on Veterinary Epidemiology and Herd Health at the Faculty of Veterinary Medicine of Utrecht University has been continuing for a year now and is entering its final semester. This was a reason for EQUATOR to focus on this international activity *par excellence* of the Utrecht Faculty. Merel Langelaar and René van Weeren interviewed the initiator of the course, Dr. Ynte Hein Schukken, and three of the participating students: Giovanna Bulgarelli from the Central American state of Costa Rica, and a couple from Thailand: Witaya Suriyasathaporn and Wanna Mahapokai.

Dr. Schukken, what is the general set-up of the course?

"The course consists of three semesters. In the first semester the emphasis is on teaching epidemiology and statistics, the second semester continues in that field, but also offers a course on agricultural economy, given by Prof. Aalt Dijkhuizen of the Wageningen Agricultural University. In this semester the students also start their own research project they have to conclude before the end of the course. In general, there are two days with lectures per week and the remaining days are for studying literature, preparing the homework we give them and so on. The third semester is largely practical with only little theoretical lectures. The students are performing their research project and have to prepare their paper. One major publication is a prerequisite to end the course with good results".

You mention that the students have to do research. Your main interest and the interest of many others in the Department of Herd Health is mastitis. Does this mean that all MSc students are doing their research projects in this area?

"Oh, no! You are right that this is an area of special interest, but we cannot offer everybody a good subject for a research project that will fit in the framework of the master course. They are studying very different subjects. One of the projects is for instance on mortality in dogs after hepatic surgery. This project is supervised by Prof. Freek van Sluijs of the Department of Clinical Sciences of Companion Animals. There is a good cooperation with many staff in the Faculty, a cooperation we would like to extend even further".

In this course you have students from Africa, Asia and Latin America. Isn't it difficult to design a course that suits them all? There must be some difference in the basic level of your students and perhaps even differences in scientific approach due to a different cultural background?

"You are partly right and partly wrong. Of course there are differences. However, everybody has to forget the classical clinical way they were taught veterinary medicine and has to focus on a new, quantitative way of thinking. This is new to everybody, whether you graduated in Peking, Utrecht or Tombouctou (if there were a veterinary faculty in this latter place). So, in a certain way everybody starts from scratch. What is important and leads to some differences during the course is the mathematical ability of the students".

Do you notice any problems with the students's adaptation to the Dutch system of teaching at university level. I (RvW), for instance have worked for a few years at the Costa Rican Veterinary School and I noticed quite a different atmosphere there, a bit more relaxed. Do your students feel it the other way round?

"Sure, many people had to get accustomed to our rather hasty and direct way of working. In our culture to a large extent only results count. For most students, after the exciting start in September, the dip comes in late autumn and the beginning of the winter. The climate must play an important role too. However, they adapt rather quickly, and I must say that the Office for International Cooperation also is of great help when there are practical problems. Wanna and Witaya may tell you more about that for their case was a very special one. Nevertheless some people have adaptation problems. One student for instance bought a diary for the first time in his life halfway the first semester. For him this was a huge step, for us it is unthinkable to live without one!"

What do you think of the motivation of your MSc students?

"The first international group had the highest motivation. When we started that course some years ago, it was not an official course, leading to an official masters certificate. The official recognition by Utrecht University did not come until halfway the course. That course was intended for and attended by people who had a keen interest in epidemiology and wanted to improve themselves in this field. There were three of them. A German student who later did her PhD in bacteriology, someone from a big pharmaceutical company who is now the head of the department for clinical trials, and a practitioner from Switzerland who had the largest large animal practice of the country and was fascinated by epidemiology. He is now the president of the Swiss Epidemiological Society. The present group is good too. However, at the start of the course you notice that some people who have been sent by their project, miss a strong personal motivation. Fortunately you can see that the motivation is growing as the course proceeds."

It must be fascinating to organize a course like this, but it will cost an awful lot of your time. Doesn't it interfere too much with your other occupations?

"Well, the idea of organizing a course like this was born from the never ending flow of requests from abroad for individual training. We thought it more efficient to make a special course for 5

to 10 students at one time. In fact, it cost me a lot of time to organize the first courses. But now much of the organizational work is done by Dr. Mirjam Nielen. She plays an important role in the course and is actually investing more time in it than I am. I really appreciate her help and I am convinced the students are of the same opinion".

Witaya Suriyasathaporn and Wanna Mahapokai are a Thai veterinary couple, who live in a small apartment in Bilthoven with their 6 months old child that was born here in The Netherlands. They both graduated from the veterinary faculty of Chulalongkorn University in Bangkok. The veterinary education in Thailand is six years like in The Netherlands, and is organised in more or less the same way. A difference however is the larger number of students (10) per veterinarian in the last year of the studies. Wanna and Witaya are both employed by the veterinary faculty of Khon Kaen University. Wanna worked at the companion animal surgery and Witaya at the large animal reproduction and physiology department. They came to Utrecht to do the Master of Science course on epidemiology and after that they will continue their research to prepare a PhD thesis, also at the Faculty of Veterinary Medicine in Utrecht. When they complete these studies they will return to Thailand to continue their work at their faculty.

The Thai couple came to Utrecht because the Dutch veterinary faculty had an unexpected advocate: "A Swedish professor from the faculty in Uppsala, who works at the veterinary faculty in Thailand, recommended the Utrecht Faculty of Veterinary Medicine. When we go back we will probably be the only ones in Thailand with a degree from Utrecht. In Thailand we don't have a herd health department, so we can learn a lot here. Knowledge of epidemiology will be very useful, not only for work in the large animal sector, but also to do research in companion animal medicine and surgery."

Giovanna Bulgarelli is a student from Costa Rica, Central America. After graduation at the Costa Rican School of Veterinary Medicine she became a staff member of the Clinic for Large Animal Medicine. The Costa Rican clinical educational system has been modelled after the Utrecht system in the course of a long-term cooperation project that started in 1985. After finishing the master course Giovanna will also return to her home country to continue her work in the Clinic for Large Animal Medicine.

Giovanna had a different start in Utrecht: "I was asked by the Costa Rican project manager to go to Utrecht to do this course. At first he told me that it would be merely a clinical training with only some epidemiological aspects. That turned out to be somewhat different", she added dryly.

How is your appreciation of the course and, in a broader sense, of your experiences in The Netherlands?

"Well, at first I wanted to go home as quickly as possible. However, when I got accustomed to the idea I began to appreciate the course more. It is a good course that broadens my knowledge of epidemiology. I really feel more able now to help the Costa Rican students and even the staff members to improve the design of their field studies".
Wanna and Witaya also expressed their satisfaction with the course: "We like it very much, it is very well arranged with a well trained staff."

Do you have any specific problems?

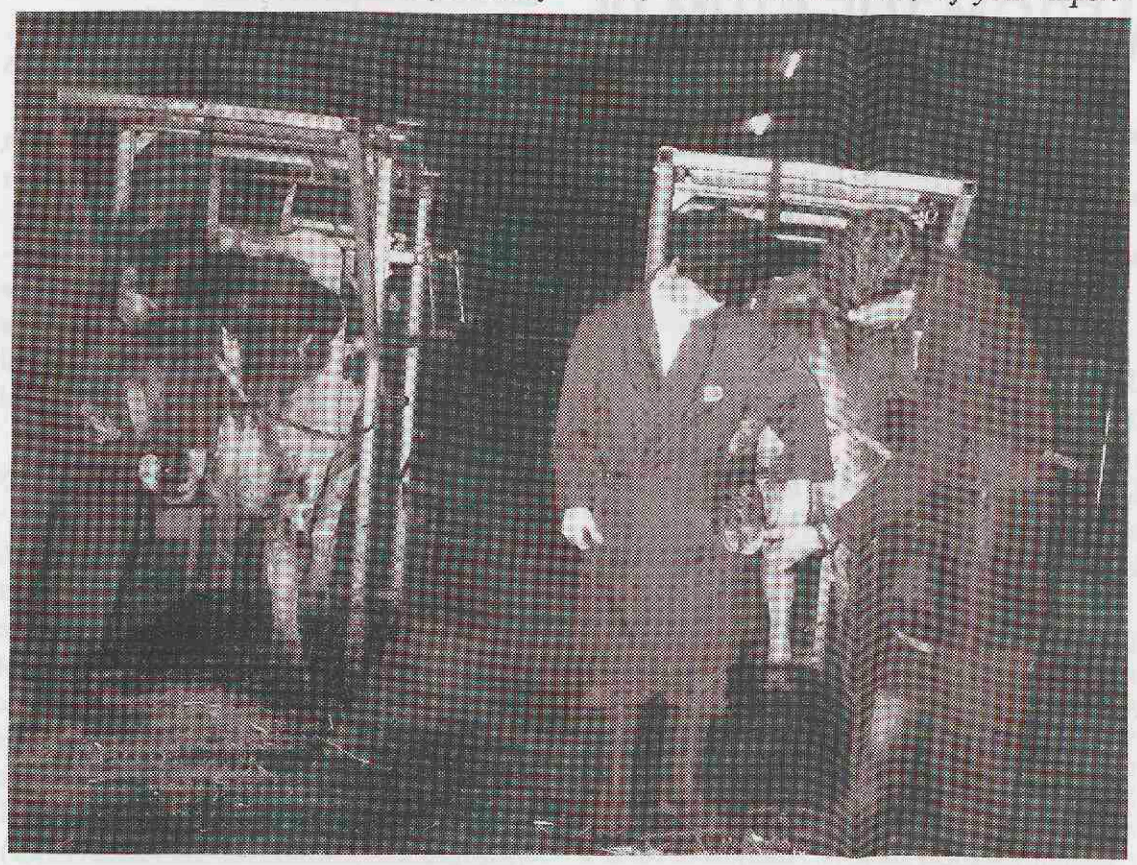
The Thai did not encounter unsolvable problems: "Not really. When we came here we had a basic knowledge of epidemiology which was good enough. We don't have problems with statistics and mathematics. The only difficulty is the language, we do speak English but it's not easy."
For Giovanna this seems to be the contrary: "My English is fairly good and I did not have many problems with that. On the contrary, now I am participating for a month in the Clinic for Large Animal Surgery and it sometimes appears that the Dutch have more problems speaking English than I have! However, I know that I was not born to be a mathematical genius. The mathematical part has not been easy for me and I also did have a low level in computer training".

The Thai couple manages to work while they have a little baby to care for.

"We only have classes twice a week, we made an arrangement with our neighbour, she is so kind to look after our baby. The other days we have to work at home, that is not always easy because the apartment is very small and the baby sleeps in the same room as we are studying. It was not really planned to have a baby here in Utrecht, but we can manage."

How are the contacts with the other students of your class?

Giovanna appears to be rather satisfied



Claw disorders are also part of the MSc course in veterinary epidemiology and herd health (Photo: Van Weeren)

with the group: "The atmosphere in the group is good. There are no frictions whatsoever. What I really miss here from time to time is the willingness to work together. In Costa Rica we used to study with a whole group, here people are working more individually."
For Wanna and Witaya things are a bit different as they are here as a couple.

Farm visits are part of this course. Are there many differences between farms in The Netherlands and your home country?

"In Costa Rica farms are different", Giovanna says, "here you can manage a farm with one person and a computer. In Costa Rica there are always more persons involved. However, I must admit that people work harder here and in a more systematical, more organized way."
Wanna didn't join the farm visits because she works with companion animals. She will go to the small animal clinic to observe how they work there. Witaya likes the farm visits very much. "The difference between the farms in Thailand and here varies with the size. In Thailand the number of cattle per farm ranges from only 5 or 10, to 100 or even 1000 animals. The bigger farms are organized in more or less the same way as in The Netherlands".

Do you have contacts with the Dutch students?

Giovanna wearily shakes her head: "I, and many foreign people with me, find it difficult to establish good relationships with the Dutch. They are very closed people. The best contacts I made, were with other foreign students, exchanged via the ERASMUS programme; they were mainly from Italy and Spain, but also from English speaking countries such as Britain and Ireland".
The Thai couple does not have so many contacts with students either: "We only meet them when we visit a farm, but that is very brief and the students change all the time. We do have contacts with Dutch people in our flat".

Do you have suggestions to improve the course?

"In general the course is very good and the staff is very flexible. It would be nice to do more farm visits or go with other veterinarians. We also would have liked to learn more about the management of the farms. We lack basic information, because many things are different in Thailand. For example feeding of cattle is different, and something like the influence of cold weather and how to protect animals from the cold, we don't know anything about that, there is no cold weather in Thailand".
Giovanna is rather satisfied too, although she sees some bottlenecks in the course: "The academic level of the professors is excellent and their skills at the educational level are very good too. My main problem is to concentrate myself during 6 or 8 hours of epidemiological or statistical teaching in one day. I see why they did it this way, but for me it would be better to have less hours on more days. Another thing that has been improved a bit now is that the professors were not available on other days than the teaching days to answer questions. They were so busy that you never could find them. This has improved a bit as we have now one hour a week for questions."

The Masters Course on Veterinary Epidemiology and Herd Health is a success. Of course some minor things remain to be improved, but in general both teachers and students appear to be very enthusiastic and highly motivated. This MSc course is a significant step forward in the internationalization of the Utrecht Faculty of Veterinary Medicine.

Merel Langelaar and
René van Weeren

CONCLUSION FROM THE STVM-95 SYMPOSIUM: VECTOR-BORNE PATHOGENS CHALLENGES FOR THE 21th CENTURY

The Society for Tropical Veterinary Medicine organized its 1995 Symposium in San Juan (Costa Rica) from 8-12 May, 1995. Recent findings concerning biotechnological research, as well as results from disease and vector control programmes were presented to an international audience from North- and Latin America, Africa and Europe. The papers which were presented during the symposium will be published in the near future (Annals of New York Academy of Science). EQUATOR can inform its readers now through a short summary composed by Dr. E. Camus of CIRAD-IEVMT (Guadeloupe), scientific chairman of the STVM-95.

Heartwater
Since the last Meeting in Guadeloupe two years ago significant progress has been made concerning heartwater.

The specificity of serological diagnosis has been greatly improved (Vliet *et al.*) and, eventually, there is a tool available for epidemiological surveys. Analysis of MAP1 and MAP2 sequence data, combined with epitope mapping studies (Reddy *et al.*, Mahan *et al.*) may also define epitopes useful for diagnosis.
Low levels of *Cowdria ruminantium* can now be detected by PCR in ticks (Mahan *et al.*).
However, there is still a question concerning the interrelationship between *Cowdria* and *Ehrlichia* (Allsopp *et al.*) which has not only consequences for the serological diagnosis but may be also for the clinical symptoms.
The protection against cowdriosis by vaccination with inactivated *C. ruminantium*, first realized in goats in Guadeloupe, has been confirmed in sheep (Mahan *et al.*) and in cattle (Totte *et al.*), but the mechanisms conferring protection are not yet elucidated. The participation of specific T-helper lymphocyte population seems evident, even if *in vitro* studies are unable to detect *Cowdria* antigen-specific T cell responses in immune cattle (Kleef *et al.*).

Analytical studies of *in vitro* culture of *C. ruminantium* could not only facilitate the development of a specific optimal medium, but could also lead to a better understanding of the mechanism of pathogenesis of cowdriosis (Neitz *et al.*).

Tropical bont tick eradication campaign

After years of discussion and meetings the tropical bont tick eradication campaign eventually began in the Lesser Antilles. The two French programmes of Guadeloupe and Martinique officially began on April 1, 1994. Many problems, in particular financial, remain (Barré *et al.*). For the other islands, the FAO/IICA/CARICOM programme based in Barbados is just beginning. Let us hope for a rapid significant progress for the whole programme. Once again, this eradication programme can technically succeed, as shown by a simulation model (Popham *et al.*), but financial and social difficulties still have to be overcome. Another important point will be to start the acaricidal tick control at the same time on each of the island, in order to avoid a dissemination of ticks with cattle egrets (Corn *et al.*) from infested islands to islands where the tick is under control.

The development of acaricide resistance in *Boophilus microplus* in South America (Thullner *et al.*, Martins *et al.*) and probably also in the Caribbean will affect the *Amblyomma variegatum* eradication campaign: it will be necessary to assess the susceptibility of different strains of *A. variegatum* but also of *B. microplus*.

Diagnosis and control of other tick-borne diseases

Probably the most significant progress is the successful *in vitro* cultivation of *Anaplasma marginale* by E. Blouin *et al.* This is really a breakthrough in anaplasmosis research.

A multiplex PCR assay can detect *Babesia bovis*, *B. bigemina* and *A. marginale* in blood samples with excellent specificity (100%) and good sensitivity (96.5%, 93.5% and 93.8% respectively) (Figueroa *et al.*). A modified MPCR non-radioactive probe assay can detect a very low parasitcamia and with an other assay *Babesia* DNA can be detected in tick samples (Buening *et al.*). The MPCR has already been used in an epidemiological survey in Mexico (Alvarez *et al.*).

B. bovis RAP.1 is strongly immunogenic for T helper (Th) cells from *B. bovis* infected and immune cattle (Brown *et al.*). Moreover Th cell epitopes are similarly shared among geographically different *B. bovis* isolates, but not with *B. bigemina*.

An apical complex-specific protein of *B. bovis* is induced by oxidative and nutritional stress. The stress proteins are believed to be functionally important and are required for the successful transition of a parasite from one host to another (Rice-Ficht *et al.*). A role is suggested for activated macrophages in the primary immune response against *B. bovis* through reactive oxygen, nitrogen intermediates and products from polyamine degradation (Johnson *et al.*).

New strategies to control anaplasmosis are focused on the tick vector. Development of vaccines against heamoparasites in ticks may be feasible as vertebrate host immunoglobulins enter the heamolymph of the ticks. However, a first trial with vaccine derived-antibodies did not appear to affect the development and transmission of *A. marginale* in ticks (Kocan *et al.*). An experimental vaccine, Plazvax, prevents the development of severe anaemia and limits the parasitaemia produced by experimental injection of different strains of *A. marginale* or by experimentally tick-transmitted anaplasmosis (Todd *et al.*, Scholl *et al.*).

An ISCOM based vaccine against dermatophilosis can promote immunity to *Dermatophilus* but the protective effect remains insufficient to be of use in the field (Sasiak and Lloyd). The identification of a genetic BOLA marker for resistance to dermatophilosis could lead to the selection of resistant cattle (Maillard *et al.*).

Ixodes scapularis adults and *Amblyomma americanum* nymphs can be infected with granulocytic ehrlichiae, a novel human infection very closely related to two animal pathogens (*Ehrlichia equi* and *E. phagocytophilica*). The ticks may serve as natural vectors of infections to humans and animals (Nicholson *et al.*).

Also a new *Babesia* spp. has been isolated from humans in 1991 in Washington and has later been observed in California (Conrad *et al.*).

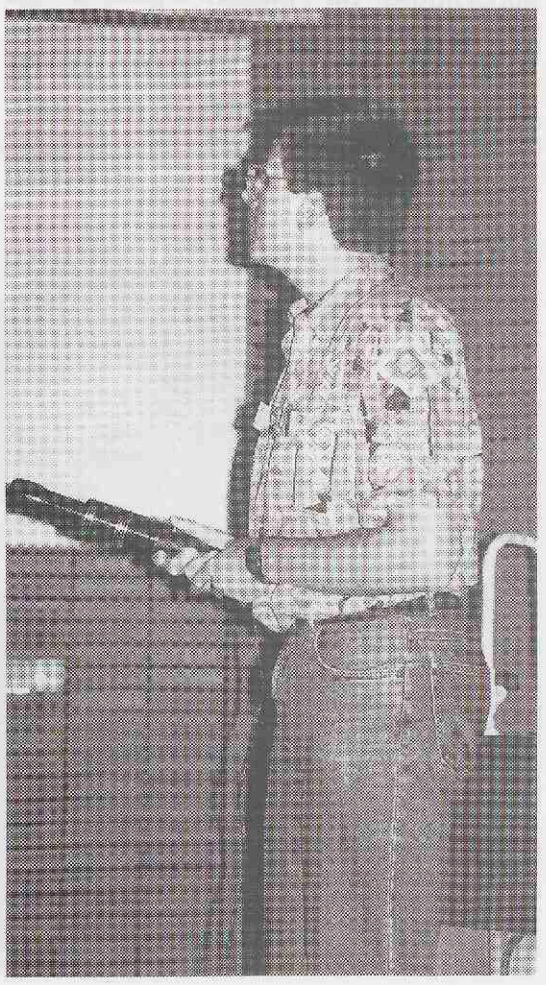
An increased understanding of the role of endothelial cells in the pathogenesis of vector-borne diseases, such as theileriosis and cowdriosis, may enable the control of microbicidal nitric oxide (NO) production or facilitate cytokine/anticytokine approaches (Brown *et al.*).

Other vector-borne pathogens

The screwworm eradication programme in Central America is progressing (Galvin & Wyss) by dispersion of sterile flies produced in Mexico. Guatemala, Belize and El Salvador are declared free. The campaign is presently going on in Nicaragua and Honduras and will reach Costa Rica next year and then Panama. A benefit/cost study clearly demonstrates the economic benefit to the livestock producer in Central America and a positive effect on the benefit-to-cost ratio (Wyss and Galvin). It is very important to have a successful example with a regional eradication programme and even if the difficulties and the methods are different, it constitutes an encouragement for the tick eradication programme.

For the first time spontaneous oviposition from wild *Cochliomya hominivorax* occurred on an artificial medium composed of sterile bovine blood, cow skin and bacteria buffered at pH 7.6 at 40°C (Poudevigne *et al.*); this 'artificial wound' proved to be attractive to gravid flies. Myiasis in cattle due to *Dermatobia hominis* does not appear as predisposing factor to myiasis by *Cochliomyia hominivorax*.

An evaluation of the detection of *Trypanosoma vivax* antigen by ELISA showed a very low sensitivity of the test, far below the parasitological detection (Desquesnes).



Dr. Van Vliet was complimented on his research which contributed to the improved diagnosis of heartwater. (Photo: De Gooijer)

Erythropoietin and the presence of inhibitors of erythropoiesis in peripheral blood and bone marrow, play a role in the anaemia development due to *Trypanosoma congolense* infection in cattle (Logan *et al.*).

The title of the Symposium was: Vector-Borne pathogens: challenge for the 21th century. Let us hope that several challenges will be won by the end of this century. That could be and should be the case of the Bont Tick Eradication Programme and of the Screwworm eradication from Central America.
Other challenges will probably take more time and are real challenges for the 21th century, like the control by vaccination of cowdriosis in Africa, the development of an efficient recombinant vaccine against babesiosis and anaplasmosis and the control of trypanosomiasis in Africa.

Dr. E. Camus
CIRAD-IEMVT
Délégation Guadeloupe

FOR YOUR INFORMATION

FREE UNIVERSITY BERLIN / FACULTY OF VETERINARY MEDICINE ORGANIZES A DIPLOMA COURSE ON TROPICAL VETERINARY MEDICINE (11 months)

Introduction
Over the last three decades the Institute of Parasitology and Tropical Veterinary Medicine with its well known "Tropenseminar" has been actively involved in training and research relevant to the tropics. Based on these experiences and as a continuation of the "Tropenseminar" the new Diploma Course focuses on etiology and infection epidemiology of livestock diseases, on principles of epidemiology and their applications; on epidemiological design and analysis of field investigations; on preventive veterinary medicine in different production systems; on veterinary public health and on planning, management and economics of disease control strategies. Upon successful completion, the course will lead to a **Diploma in Animal Health Management**

The course is divided into two parts. Part A (six months) consists of lectures, course work and practical work in Berlin and ends with oral examinations. Part B (five months) consists of three months field studies (project work) which will be carried out attached to ongoing programmes or projects in developing countries. Part B ends with the completion of the Diploma thesis in Berlin (two months).

The next course will start on 1 March 1996 and finishes on 31 January 1997.

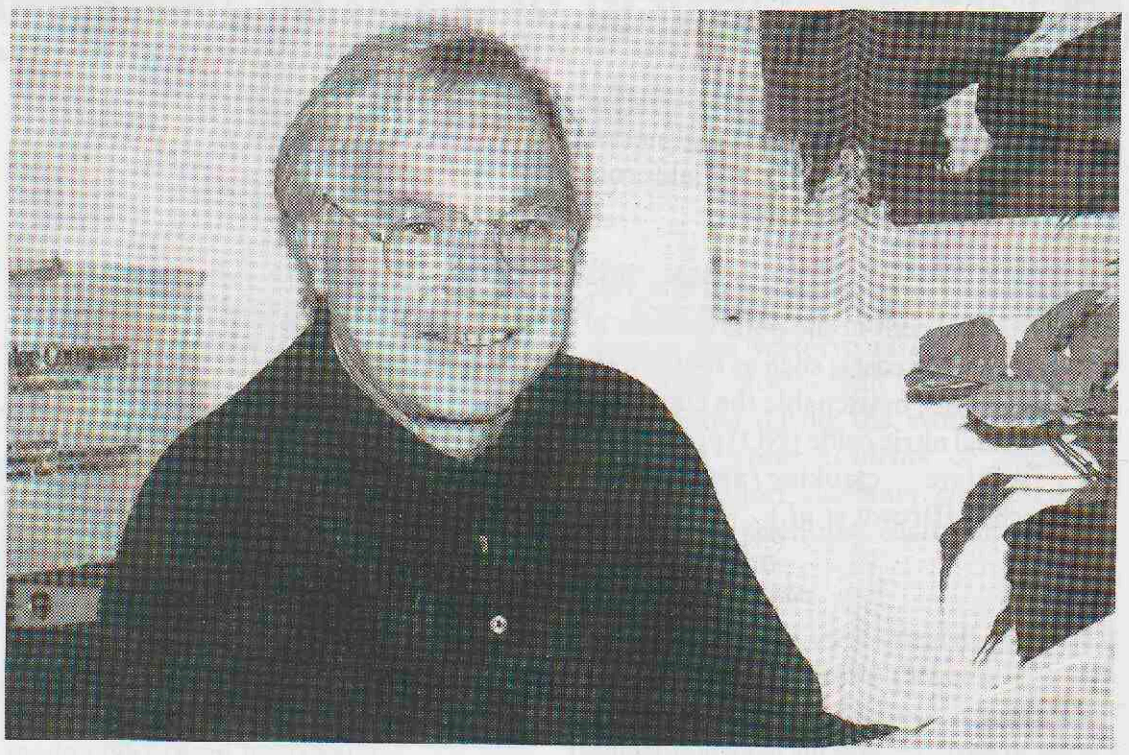
Admission requirements
German veterinarians and veterinarians from other European countries can apply for admission. A doctorate (or equivalent) in veterinary medicine and at least two years of professional experience is required as well as proficiency in English.

Language
The course is conducted in English. A good knowledge of spoken and written English is a prerequisite and has to be proven by a score of a standard test before admission (TOEFL: minimum 540; ELTS-Test British Council: minimum band 5). Applicants coming from a country where English is an administrative language can be exempted from having to prove language proficiency.

Fees and scholarships
A limited number of scholarships for German participants for this course is available according the "NaFöG/-NaFöVo/GFG" arrangement (DM 1.200 plus family allowances DM 200). For participants who do not qualify for the "NaFöG", a course fee of DM 20,000 will apply.

Application
The deadline to submit applications is 30 November 1995.
The following is required for complete application: Personal data, motivation, interest, expectations related to the course, copies of qualifications (academic certificates), certificate of proficiency in English and two recent passport photographs.

For applications and information
Postgraduate Studies Tropical Veterinary Medicine, Diploma Course, Free University Berlin, Koenigsweg 67
D-14163 Berlin, Germany (tel.: +49.30-8108.2326, telefax: +49.30.8108.2323).



Prof. Mehlitz coordinates the postgraduate training in tropical veterinary medicine at the Free University Berlin (Photo: De Gooijer)

RECENT PUBLICATIONS (18)

The section RECENT PUBLICATIONS is included in the English issues of EQUATOR. Scientific publications of the Faculty of Veterinary Medicine and other research institutes in The Netherlands, relevant to livestock production and health in the tropics as well as titles of papers by Dutch veterinary scientist working on animal health and production topics in relation to developing countries, will be included. Please inform the editor of your publications so we can bring them to the attention of the readers of EQUATOR. For reprints contact the authors directly, their addresses can be obtained from the editorial office (Office for International Cooperation, P.O. Box 80.163, 3508 TD Utrecht, The Netherlands, telefax: +31.30.532116, E-mail: bic@bic.dgk.ruu.nl).

ANIMAL HEALTH

Anon. (1994). Veterinary parasitic control guide 94/95. Eds. A.S.P.A.M. van Miert and R.A.J.M. van Meer. Alfasan Nederland b.v., Woerden, pp. 92.

Otter, W. den, Hill, F.W.G., Klein, W.R., Koten, J.W., Steerenberg, P.A., Mulder, P.H.M. de, Rhode, C., Stewart, R., Faber, J.A.J., Ruitenberg, E.J. and Rutten, V.P.M.G. (1995). Therapy of bovine ocular squamous-cell carcinoma with local doses of interleukin-2: 67% complete regression after 20 months of follow-up. Cancer Immunology and Immunotherapy 41: 10-14 .

EDUCATION

Bosman, H.G., Does, C. van der and Zwart, D. (1995). Training programmes for livestock specialists in developing countries. An inventory of causes taught within the European Community. Agricultural University Wageningen and International Agricultural Centre, Wageningen, pp. 90.

LIVESTOCK PRODUCTION

Graaf, T. de and Dwinger, R.H. (1995). Estimation of milk production losses due to subclinical mastitis in dairy cattle in Costa Rica. In: Proceedings third IDF International Mastitis Seminar, Tel-Aviv, Israel, 28 May-1 June, 1995. Eds. A. Saran and S. Soback, pp. 127-128.

PUBLIC HEALTH

Dube, N., Geelen, M.J.H. and Nyathi, C.B. (1994). Mycotoxins and their impact on food safety: a mini review. Zimbabwe Veterinary Journal 25: 85-97.

Feresu, S.B., Bolin, C.A., Korver, H. and Terpstra W.J. (1994). Classification of leptospires of the pyrogenes serogroup isolated from cattle in Zimbabwe by cross-agglutinin absorption and restriction fragment length polymorphism analysis. International Journal of Systematic Bacteriology 44: 541-546.

TICK-BORNE DISEASES, THEIR AGENTS AND VECTORS

Gueye, A., Jongejan, F., Mbengue, Mb., Diouf, A. and Uilenberg, G. (1994). Essai sur le terrain d'un vaccin atténué contre la cowdriose. Revue d'Elevage et de Médicine vétérinaire des Pays tropicaux 47: 401-404.

Hermans, P., Dwinger, R.H., Buening, G.M. and Herrero, M.V. (1994). Seasonal incidence and hemoparasite infection rates of Ixodid ticks (*Acari: Ixodidae*) detached from cattle in Costa Rica. Revista de Biologia Tropical 42: 623-632.

Vliet, A.H.M. van (1995). Molecular characterization and detection of *Cowdria ruminantium*. PhD thesis, Utrecht University, Utrecht, pp. 128.

TSETSE AND TRYPANOSOMIASIS

Moloo, S.K., Grootenhuis, J.G., Jenni, L., Brun, R., Meirvenne, N. van and Murray, M. (1995). *Trypanosoma brucei rhodesiense*: Variation in human serum resistance after transmission between bushbuck and domestic ruminants by *Glossina morsitans*. Acta Tropica 59: 255-258.

VACANCIES INTERNATIONAL COOPERATION

This section contains vacancy announcements which the editorial board considers to be of possible interest to Dutch veterinarians. Besides vacancies that will be taken from Vacatureblad Internationale Samenwerking, Tijdschrift voor Diergeneeskunde, Veterinary Record, Intro vacatures (RDP Advies/ Ministry of Internal Affairs) etc., there will be room for personnel advertisements. For further information one is requested to apply directly to the institution or company.

VETAID

VETAID (UK) is looking for a:

VETERINARIAN / LIVESTOCK PRODUCTIONIST / TETE MOZAMBIQUE

Information:
VETAID is a specialist charity organization working on livestock development. The activities of VETAID are expanding in Mozambique and there is a position for a veterinarian/livestock productionist to join a new and exciting project. The veterinarian will work as an advisor to the Livestock Service of the Mozambique Government in the Tete Province. The activities are part of the Restocking and Animal Health Care Programme which is funded by the European Union.
The duration of the contract is 18 months from October, 1995.

Required:
Mature candidate, Portuguese speaking and with a minimum of 5 years experience in tropical development

Application:
Candidates should apply with current CV as soon as possible to Jeremy Davies, VEDAID, CTVM, Easter Bush, Roslin, Midlothian, EH25 9RG, Scotland (UK) (Tel. and telefax: +44.131.-4453129).

Koninklijk Instituut voor de Tropen (KIT)

L'Institut Royal des Tropiques (KIT), Amsterdam, cherche un candidat qui remplira la fonction de:

ASSISTANT TECHNIQUE 'ZOOTECHNIE'/ SIKASSO / MALI

Auprès de l'Equipe Systèmes de Production et de Gestion des Ressources Naturelles (ESPGRN)

Information:
L'Institut Royal des Tropiques (KIT), à l'effectif de 500 personnes, contribue activement à la collaboration internationale. Ses activités s'orientent aussi bien vers les pays en voie de développement que vers le public néerlandais. Les principaux terrains sur lesquels se concentre une attention particulière sont les suivants: développement rural, santé publique sous les tropiques, enseignement, théâtre, activités sur le plan des musées de même que d'autres formes de transfert de connaissances et d'information.

L'Equipe Systèmes de Production et de Gestion des Ressources Naturelles (ESPGRN/Sikasso), appuyée par le KIT, fait partie du Centre Régional de Recherche Agronomique de Sikasso au Mali-Sud, qui relève de l'Institut d'Economie Rurale (IER) de Mali. L'ESPGRN est une équipe pluridisciplinaire de recherche (en milieu paysan), composée d'Agronomes, Aménagistes, Zootechniciens, Economistes et Sociologues, Maliens et expatriés. Son rôle principal est d'identifier les contraintes techniques et socio-économiques de production agricole et de Gestion des Ressources Naturelles à travers une approche participative, facilitant la communication entre paysan-(ne)s, vulgarisateurs et chercheurs. Le but final est de développer des messages et approches méthodologiques participatives, adaptés aux réalités paysannes.

Un des axes de recherche de l'ESPGRN est l'intensification des systèmes d'élevage et l'intégration agriculture-élevage. Ceci comprend des thèmes comme l'utilisation rationnelle de sous-produits agricoles, l'amélioration des techniques de stockage des fourrages, le parcage et la stabulation saisonnière, la gestion des troupeaux bovins, l'amélioration de l'élevage des caprins et la gestion des pâturages naturels.

Tâches:
Perfectionner et adapter les technologies dans les domaines de l'intégration agriculture-élevage et de l'intensification d'élevage.
Développer des techniques d'aménagement et de gestion paysanne pour améliorer l'utilisation des pâturages naturels communs: identifier et quantifier les critères paysans pour suivre la dynamique des Ressources Naturelles.
Développer, en étroite collaboration avec les organismes de vuLgarisation, des approches pour vulgariser les messages et techniques déjà mis au point: élaborer des outils adaptés aux conditions paysannes.
Renforcer et élaborer davantage les outils participatifs, l'approche genre, et la concertation avec les différents acteurs du développement rural.

Qualification:
MSc. (ou équivalent) en zootechnie.
Bonne expérience en recherche appliquée et en recherche participative (utilisation des outils participatifs, expérience avec groupes paysans de recherche).
Etre capable de traduire des résultats de recherche en messages de vulgarisation et en approches pratiques de vulgarisation.

Savoir travailler en équipes pluridisciplinaires sensibilité pour les aspects socio économiques d'élevage.
Faculté de communication avec des paysans, des vulgarisateurs et des chercheurs.
Sept à dix ans d'expérience professionnelle, dont de l'expérience en Afrique de l'Quest.
Bonne maîtrise du français.

Salaire:
Le niveau du salaire dépend de l'âge et de l'experience et varie de Dfl. 5.123,- à Dfl. 7.051,- brut par mois. L'allocation de vacances est de 8% et les avantages non-salariaux sont excellents.

Information:
Pour des informations contacter M.B. Huijsman (tel: +31.20.5688269).

Adresser le dossier de candidature: (lettre de candidature précisant les motivations, curriculum vitae complet, expériencc) sous référence 51.08 avant le 22 septembre à:
Institut Royal des Tropiques (KIT), Dép. Personnel & Organisation, à l'attention de M.C. Yigit, Mauritskade 63, 1092 AD Amsterdam, Les Pays-Bas (telefax: +31.20.5688205).

CALENDAR 1995-1996

Berlin, Germany
25 - 29 September, 1995.
8th International Conference of Institutes of Tropical Veterinary Medicine: Livestock production and diseases in the tropics: Livestock production and human welfare. Organized by: Association of Institutions of tropical Veterinary Medicine (AITVM). Programma: Plenary sessions with papers of invited speakers and six workshops introduced by brief communications and posters on: Peri-urban livestock production; Epidemiology and socio-economics in different livestock systems; Impact of livestock on the environment; Veterinary public health in different livestock systems; The role of women in animal husbandry and Target oriented training needs, demands and facilities in less developed countries. For registration: Prof. Dr. D. Mehlitz, Institute for Parasitology and Tropical Veterinary Medicine, Free University of Berlin, Koeningsweg, 14163 Berlin. (Tel.: +49.30.81082326, telefax: +49.30.81082323)

Utrecht, The Netherlands
6 October, 1995.
6th International symposium: Tropical Animal Health and Production. Theme: 'Helminth diseases of ruminants: diagnosis, epidemiology and control'. Organized by the Committee for the Advancement of Tropical veterinary Science (CATS) and the Office for International Cooperation of the Faculty of Veterinary Medicine of Utrecht University. Registration: Office for International Cooperation, Faculty of Veterinary Medicine. P.O. Box 80.163, 3508 TD Utrecht (Telefax: +31.30.531815, E-mail bic@bic.dgk-.ruu.nl).

Berlin, Germany and Addis Abeba, Ethiopia
January, 1996 - December, 1997
4th Master of Science Training Course in "Epidemiology and preventive veterinary medicine" for veterinarians from developing countries. Organized by: veterinary faculties of the Free University of Berlin and Addis Abeba University. Programme includes one year of course work, exams and research participation in Berlin and one year of applied research, short training courses and workshops in Addis Abeba. Subject: modern concepts in population medicine for the improvement of the health status of animal populations. Tuition fees: US$ equivalent of DM 29,000. Closing date for registration: 30 September, 1995. Information and registration: The Coordinator, Freie Universität Berlin, Postgraduate Studies in tropical Veterinary Medicine, Auguststrasse 37, D-12203 Berlin.

Oenkerk, The Netherlands
15 January - 12 July, 1996
9th International Course on Dairy Husbandry and Milk Processing. Programme: Dairy development, Animal husbandry, Milkprocessing, Dairy production, Teaching and extension, Dairy farm management, Small scale milk processing. Closing date: 1 October 1995. Tuition fees Dfl. 7,100,-. Information and application: IPC Livestock, Dairy Training Centre Friesland, P.O. Box 85, 9062 ZJ Oenkerk (Tel.: +31.5103-.61562, telefax: +31.5103.61628).

Barneveld, The Netherlands
26 February - 24 May, 1996
18th Animal Feed Training programme (AFTP). Organized by: IPC Livestock, Barneveld College. Candidates may enter following completing of one of the international IPC animal husbandry courses. Direct entry is also possible. Programme includes theoretical and practical subjects, traineeships, workshops etc. Subjects: technical, nutritional, organizational and economic aspects of animal feed production. Fees including board and lodging: Dfl. 12,000 or 14,500 (direct entry). Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.3420-.14881, telefax: +31.3420.92813).

Berlin, Germany
1 March, 1996 - 31 January, 1997
'Diploma Course on tropical veterinary medicine' for European veterinarians leading to 'Diploma in Animal Health Management'. Programme: Part A: 6 months of lectures, course work and practicals in Berlin and Part B: 5 months consisting of 3 months field studies carried out in projects in developing countries and 2 months thesis work in Berlin. Course fees DM 20,000. Closing date for application: 30 November, 1995. Information and application: Postgraduate Studies Tropical Veterinary Medicine, Diploma courses, Free University Berlin, Koenigsweg 67, D-14163 Berlin (Tel.: +49.30.81082326, telefax: +49.30.81082323).
See for more details in the collum 'For your information' elsewhere in this EQUATOR.

Beijing, P.R. China
19 - 22 March, 1996
First China International Annual meeting on Agriculture Science and Technology: 'Agro Annual Meeting China 96'. Including: Symposium, exhibition trading. Organized by: Chinese Association of Agricultural Science Societies and Dep. of Animal Husbandry and Health, Ministry of Agriculture. Theme: Animal industry and animal product processing. Programme: Recent development and prospects for the 21st century in China and other countries in R&D, laboratory and teaching instruments and development of technology, equipment and products. Symposium registration fee us$ 350. Closing date: 20 December, 1995. Location: Beijing International Convention Centre. Information and registration: Mr. Zhao Weining, Dep. of Animal Husbandry and Health, Ministry of Agriculture, Add:No. 11, Nong Zhanguan Nanli, Beijing 100026 (Tel.: +86.10.-4192850, telefax: +86.10.4192468).

Veldhoven, The Netherlands
6 - 8 May, 1996
EuroResidue III, Conference on residues of veterinary drugs in food. Organized by: Federation of European Chemical Societies (FECS) and Netherlands Society for Nutrition and food Technology. Subjects: Antibiotics; hormones and beta-agonists; LC/MS/MS applications; residues in cultivated fish; toxic effects of veterinary drugs; biosensors; 'bound' residues. Registration fee: Dfl. 625,-. Location: Koningshof Congress Centre. Information and registration: Dr. N. Haagsma, Dep. of Food of Animal Origin, Faculty of Veterinary Medicine, P.O. Box 80.175, 3508 TD Utrecht (Tel.: +31.30.535365, telefax: +31.30.-532365).

Barneveld, The Netherlands
26 August 1996 - 27 February, 1997
26th International course on poultry husbandry and 26th International course on pig husbandry. Organized by: IPC Livestock, Barneveld College. These courses will run at the same time. Following these courses participation is possible in the 19th Animal Feed Training programme (AFTP), which runs from 3 March to 25 May, 1997. Direct entry in this last course is also possible. Fees including board and lodging: Poultry course: Dfl. 24,500; Pig course: Dfl. 24,500, Feed course; Dfl. 12,000 or 14,500 (direct entry). Closing date: 1 May, 1996. Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.3420-.14881, telefax: +31.3420.92813).

Utrecht, The Netherlands
3 September 1996 - 28 February, 1997.
4th International Master Course "Herd Health and Epidemiology". Organized by: Department of Herd Health and Reproduction of the Faculty of Veterinary Medicine. Programme: The Master Science course offers an introduction to the application of epidemiological methods specifically applied to the field of population oriented studies in animals. Course fee: Dfl. 15,000,- (not including lodging etc.). Closing date for registration 1 July, 1996. Information and registration: Office for International Cooperation, Faculty of Veterinary Medicine, P.O. Box 80.163, 3508 TD Utrecht (Tel.: +31-.30532116, telefax: +31.30.531815, E-mail: bic@bic.dgk.ruu.nl).

Utrecht, The Netherlands
27 September, 1996
7th International symposium: Tropical Animal Health and Production. Theme 'Veterinary public health and zoonoses'. Organized by the Committee for the Advancement of Tropical veterinary Science (CATS) and the Office for International Cooperation of the Faculty of Veterinary Medicine of Utrecht University. Registration before 1 September, 1996 to Office for International Cooperation, Faculty of Veterinary Medicine. P.O. Box 80.163, 3508 TD Utrecht (Telefax: +31.30.531815, E-mail bic@bic.dgk.ruu.nl).

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November, 1995

PARASITOLOGISTS PRESENT NEW OUTLOOKS ON THE CONTROL OF HELMINTH DISEASES AT SYMPOSIUM IN UTRECHT

On 6 October, 1995, the Faculty of Veterinary Medicine of Utrecht University organized the 6th Symposium on 'Tropical Animal Health and Production'. The theme of this year's symposium was: 'Helminth diseases of ruminants: diagnosis, epidemiology and control'. The programme was centred around 5 topics: (1) General aspects of control, (2) Diagnosis and immunization, (3) Interactions between helminth infections and the environment, (4) Genetic resistance against helminth infections and (5) Epidemiology, prevention and economic aspects. Eleven speakers, two from the Utrecht Department of Parasitology and Tropical Veterinary Medicine and nine from universities, research institutes or projects in Africa or Europe were invited to give a presentation. At the end of the day the organizers could look back on a successful day. With 75 participants coming from eight European and five African countries the symposium on helminths was one of the best attended symposia in the series on Tropical Animal Health and Production organized in Utrecht since 1990.

General aspects of control

During the session on: 'General aspects of control' two speakers presented a key note address: Dr. Jörgen Hansen of the Food and Agriculture Organization (FAO) and Prof. S.N. Chiejina of the University of Nigeria.

In his opening address entitled: 'Helminth control in tropical countries: need, strategies, benefits', Dr. Hansen stressed that: "Parasitologists know the seriousness of the problems caused by helminths, especially in the tropics, but only limited documentation exists on the impact these parasites cause in the tropical zone. Unfortunately, there is only limited general acceptance and recognition of the seriousness of this situation. The problem should be brought much more to the general attention. Presently only very few livestock projects put money into animal health and there is very little or no input in parasite control. Major efforts have been undertaken, and some are still in progress, to control single infectious diseases like foot-and-mouth disease (FMD), rinderpest, tick borne diseases and trypanosomiasis, in many parts of Africa. Often these efforts do not result in increased production. An integrated health service is required most urgently. In its collaborative programme with the national governments the FAO stresses the importance of the inclusion of helminths control in a health control package with integrated strategies and actions. The costs for anthelmintic treatments are relatively low (0.10 -0.15 $c per treatment); most expensive is the transport to get to the animals. When you are there do as

Dr. J.W. Hansen of FAO (right), the key note speaker of the symposium discusses the need for helminth control in tropical countries (Photo: De Gooijer)

much as you can! The benefits will become even more visible if the health control package is combined with improved nutrition. By this approach many problems can be solved".

Research needs

Dr. Hansen further noted that: "Knowledge about parasites is in universities, not so much in veterinary services. A flow of information both ways is needed. Linkage between helminth species and age preferences need to be defined, as well as specific local problems e.g. like flukes in Vietnam and Nepal. Much of the data collected in the past is not good enough to design epidemiological models for helminth diseases. There is a great need for good solid data. The design of control strategies has to be orientated to the local situation and the education of the people is most important".

Drug resistance reaches alarming levels in South America

Finally Dr. Hansen asked attention for the problem of anthelmintic resistance. "Field veterinarians and farmers know the problem of internal and external parasites. Therefor, the sales of anthelmintic drugs by private veterinary practices is coming up as a relative easy way of earning money. But, as pharmaceutical companies and their representatives are, sometimes unnecessary, pushing the sales of these drugs, the risks for the development of resistance to anthelmintic drugs are rapidly increasing. Documentation on the real benefits of anthelmintic treatment is very scarce and often obtained from experiments conducted under controlled conditions. He noted that an alarming situation has developed in South America, where anthelmintic resistance has developed on 92% of the farms. It is very important to pay attention to resistance levels before a new drug is introduced in a specific area".

The situation in West Africa

In his presentation Prof. Chiejina described the 'Current status and priorities of research on the epidemiology and control of helminth infections of ruminants in West Africa'. He started by noting that "Accurate and up-to-date estimates of the socio-economic impact of enzootic helminth diseases of livestock in the 17 countries of West Africa is lacking. But nevertheless there is currently useful basic epidemiologic data on the more important infections". Prof. Chiejina summarized this information on parasitic gastro-enteritis, fasciolosis and *Taenia saginata* cysticercosis in his presentation and concluded by indicating the areas requiring urgent investigations (see the abstract of this presentation in this EQUATOR).

Diagnosis and immunization

During this session two papers were presented by the Utrecht scientists Dr. Maarten Eysker and Dr. Henk Schallig. Dr. Eysker compared the various parameters that can be determined to estimate the gastro-intestinal nematode infection levels. He stated that: "Disease can usually be diagnosed relatively easy from signs in combination with the grazing history. However, the estimation of the impact of subclinical infections is far more important and unfortunately by no means easy". Several 'new' techniques have been developed which measure parameters such as serum pepsinogen values, serum gastrin values and antibody and antigen titres as well as DNA probes to identify parasite DNA. The most promising of these methods for wider application seems to be the ELISA for antibodies; although it still needs better standardisation and an upgrading of the species/genus-specificity of the antigens used. Elaborating further on the subject Dr. Schallig highlighted that such ELISA can be very useful in sero-epidemiological studies in which large groups of animals must be examined. Most essential is the identification of specific antigens for the improvement of the diagnostic test and for the development of immunological control methods. Recently the excretory/secretory (ES) products have received increasing attention. Dr. Schallig described studies that were carried out on the ES products of *Heamonchus contortus* and indicated that also *H. placei*, which is a of major concern in tropical areas, was included in these experiments. Biochemical analysis has identified the proteins of the ES products as proteolytic enzyme. It was shown that infected animals produce antibodies against these enzymes. The potential of these enzymes as vaccine candidates is presently being evaluated.

Studies under village conditions

In the session on 'Interactions between helminth infections and the environment', Dr. Jacob Zinsstag started his presentation by introducing the helminthosis network in West Africa. "Since 1987, a research group funded by the Swiss Development Cooperation is building up a helminthosis network at the International Trypanotolerance Centre in The Gambia and at several institutions in the subregion. The ultimate goal is to improve rural income through better livestock productivity using parasite control. This objective must be reached according to demand and not to science; it must be rather a mixture of both. A control scheme should be a combination of management improvements and the strategic

use of anthelminthics. Such a scheme needs to be economically beneficial and must meet farmers priorities for scarce input allocation. As a consequence, such a strategy must not be analyzed using only parasitological and productivity parameters but also farming system and economic criteria". Dr. Zinsstag presented an approach from epidemiological baseline studies to large scale control experiments, economic analysis and acceptance studies conducted under village conditions in The Gambia.

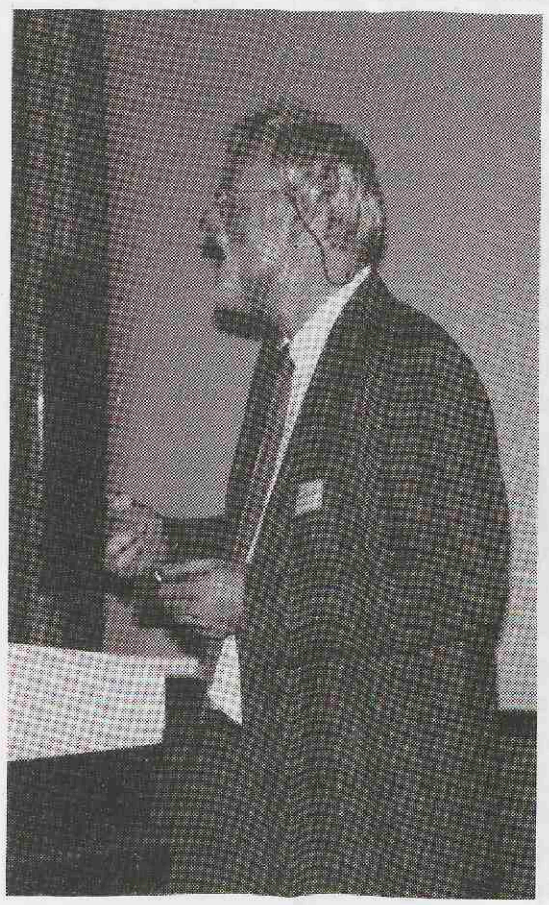
Interaction between helminth infections and nutrition

Dr. R. L. Coop was invited to present results of nutrition experiments in sheep infected with helminths conducted at the Moredun Research Institute in Edinburgh (UK). Dr. Coop described two mechanisms of interaction: "When intakes of infective larvae are high and the plane of nutrition is suboptimal, mortalities frequently occur but more insidious are the losses resulting from poor reproductive performance and reductions in meat, milk and wood production, and reduced ability to combat concurrent disease. These interactions can be considered from two aspects. Firstly, the influence of the parasite on the nutrition status and metabolic processes of the host and secondly, the influence of host nutrition on the establishment and survival of the parasite population and the development of resistance to the parasitic infection". Concerning the metabolic process dr Coop noted that: "The overall effect of infection in sheep with gastrointestinal nematodes can be summarised as diversion of amino acids away from productive processes such as meat, milk and wood production into those processes which sustain the integrity of the gastrointestinal tract and maintenance of homeostatic mechanisms which are essential for life. The protein requirements of the parasitised ruminant are consequently increased. Remarkable is the observation that sheep given a choice between feeds are able to modify their diet selection in order to overcome the adverse effects of subclinical gastrointestinal parasitism".

Citing from the literature Dr. Coop highlighted some interesting observations made under field conditions in the tropics. "Studies in south-east Asia and the Pacific have clearly demonstrated that supplementation of a low quality roughage diet with urea can enhance the ability of pen-fed sheep to resist infection with gastrointestinal nematodes. Also, grazing studies with urea/molasses feed-blocks demonstrated reductions in faecal egg output and increased liveweight gain at weaning. He concluded: "There is clearly considerable potential for the development of low-cost supplements which enable enhanced production from locally available low quality roughage feeds. The incorporation of such feed supplements into grazing management and husbandry systems should reduce the dependency on anthelmintics, thus lowering the pressure for selection of resistant strains of nematodes and conserving the efficacy of the currently available drug families".

Genetic resistance against helminth infections

Genetic resistance to infections has been given increasing attention over the last decades, as a sustainable means to increase productivity. Biotechnological techniques have created the possibilities to speed up the exploitation of certain species and breed characteristics. Dr. Mike Stear of Glasgow Veterinary School presented the progress made in recent years in the study of 'Sources of variation in faecal egg output among sheep infected with *Ostertagia circumcincta'*. "One of the most remarkable features of parasitic infections in general, and *Ostertagia circumcincta* infection of sheep in particular, is the extensive variation among hosts in resistance to infection, as assessed by parasite burdens and production of eggs or infective larvae. A series of epidemiological, genetic and immunological studies have characterised the sources of variation among sheep. Epidemiologically, the factors which influence parasitic infections have been divided into extrinsic factors, which differ between flocks, and intrinsic factors, which differ within flocks. Extrinsic factors include climate, weather and management, including nutrition, stocking density and frequency and type of anthelmintic treatment. The intrinsic factors which account for the variation among animals have been characterised. They include dam, sire, sex, date of birth and history of exposure to infection. The influence of these variables depends upon the age of the animal. There are no detectable genetic effects in lambs less than three months old. Genetic control of an acquired response develops in two stages. Firstly, control of fecundity, which is associated with the development of a parasite specific local IgA response and secondly, control of worm burden which is associated with the production of globule leucocytes in the abomasal mucosa". Dr. Stear concluded that genetic selection could be based on determining the faecal egg output of individual sheep during the 3-6 months age period. It is likely that 1 gene of the MHC complex is responsible for 50% of the additive genetic variation in egg counts.



Dr. M. Eysker: "The estimation of the impact of subclinical gastrointestinal nematode infections is by no means easy" (Photo: De Gooijer)

Genetic resistance in African ruminant species and breeds

Dr. R.L. Baker of the International Livestock Research Institute (ILRI), in Nairobi, Kenya, presented in his paper the natural resource of livestock breeds in the tropics and the criteria of resistance, resilience or tolerance and the parameters to be measured. "While many of the publications on genetic variation for resistance in disease can be criticised in terms of experimental design, it is reassuring to note that some breeds have been identified as resistant in a number of independent studies. This applies particularly to the Florida Native, St. Croix and Red

Maasai sheep breeds, and it is very likely these breeds have some real resistance to internal parasites. It is worthy of note that the St. Croix sheep originated from West Africa and are probably related to the Djallonke sheep, which are believed to be relatively resistant to endoparasites. Most of the breeds identified as being relatively resistant are native or 'unimproved' breeds. This presumably reflects the fact that these breeds have been under natural selection for a long time with little or no treatment with anthelmintic.

In small ruminants most of the heritability estimates of resistance to endoparasites, assessed in terms of either faecal egg count (FEC) or packed cell volume (PCV) percentage, are from Merino or Romney sheep in Australasia. The average heritability for a single FEC measurement was 0.32, while the average estimates for PCV was 0.35. The heritability of the mean of several (2 to 3) egg counts recorded in different infections increased to about 0.5-0.6. In Africa, the few estimates of heritabilities and repeatabilities of resistance to endoparasites in sheep and goats are similar to those found in Australasia.

While there has been less research on genetic resistance to gastro-intestinal nematodes in cattle than in sheep, there is evidence of genetic variability for resistance both between and within cattle breeds. It has been clearly documented that under Australian conditions the *Bos indicus* cattle (i.e. Brahman and Brahman crosses) are more resistant to both gastrointestinal nematodes and ticks (*Boophilus microplus*) than *Bos taurus* breeds (Hereford and Shorthorn). In West Africa their is also some limited evidence that the trypanotolerant N'Dama cattle are more resistant to endoparasites than Zebu cattle". Dr. Baker indicated that ILRI is preparing plans to start a research programme on genetic resistance to helminth infections in sheep.

Control of gastro-intestinal nematodes in Kenya

Dr. N. Maingi of the Faculty of Veterinary Medicine of the University of Nairobi presented results of a study conducted on the use of anthelmintics on 50 farms in the Nyandarua district. A questionnaire survey indicated heavy reliance on anthelmintics for the control of nematodes and liver flukes in sheep. The most common practice was to treat sheep at intervals of approximately 3 months. Similar observations were made in a study carried out in parts of the Rift Valley, Central Province and Nairobi area to determine the sale and usage of anthelmintics. Dr. Maingi also reported on some interesting studies which determined the effectiveness of strategic anthelmintic treatments in sheep.

Nematode infections of goats in the humid tropics

Dr. P. Dorny, presently working at the Prince Leopold Institute of Tropical Medicine, in Antwerp, Belgium, presented to the audience a paper based on his experiences in Malaysia. "The humid tropical environment is very favourable for year round development of preparasitic stages on pasture. In Malaysia, it was found that for *H. contortus* development of eggs to infective L3 larvae takes only 3 to 3.5 days on open pasture and about 5 days on vegetation under rubber trees, irrespective of the season. On the other hand survival of larvae on pasture is short, due to exhaustion of stored energy. A large proportion of the goats in the humid tropics is probably never treated with any anthelmintic during their lives because anthelmintics are not affordable for or available to all farmers. However, parasite control can increase small ruminant production in the humid tropics dramatically. As a result there is a growing awareness amongst small farmers of the importance of helminths as causes of production losses and death. Unfortunately, the year round development and survival of preparasitic stages of strongyles and the current management make the control a difficult task. Currently, control is solely based on suppressive anthelmintic treatments. In some areas the frequency of treatments is very high, up to 15 treatments per year, but generally three to four treatments per year are practised. The frequent and often irresponsible use of anthelmintics in some areas has led to the development of anthelmintic resistance".

Schistosomiasis in cattle

In the final presentation of the day Dr. Jan de Bont of the Faculty of Veterinary Medicine of the University of Gent, Belgium, focused on schistosomiasis in cattle in Africa and Asia. He paid attention to a large scale epidemiological study carried out in Zambia and to the significant progress that has been made in the development of an effective recombinant vaccine against *Schistosoma matteei*. "The potential of a recombinant *Schistosoma bovis*-derived glutathione S-transferase (rSb28GST) to protect cattle against *S. mattheei* infection was tested. The objective was to compare the results on a single heavy experimental challenge with those obtained in natural conditions of repeated moderate challenge. High specific antibody titres were measured after the second inoculation. Groups of vaccinated and control calves were then challenged either experimentally or naturally on a farm infected with *S. mattheei*, and perfused 12 weeks and 9 months later, respectively. All vaccinated animals infected experimentally developed clinical schistosomiasis. The immunization protocol used did not protect cattle against the massive experimental challenge. However, natural infections were much lighter in intensity. At perfusion, a significant reduction in the mean miracidial count (-93%) and female worm burden (-50%) were recorded in the vaccinated group. Although egg laying was found higher in vaccinated animals, the mean tissue egg count in vaccinated animals was reduced by 42% as compared to controls. It therefore appears that the recombinant rSb28GST can provide significant protection against *S. mattheei* natural infection in cattle by affecting worm viability. Postmortem examination of animals from the field suggests that the vaccine also affects the course of infections with *Fasciola gigantica*.

Closing

In his closing remarks Dr. Hansen complimented the organizers of the Utrecht Faculty of Veterinary Medicine for the organization of a useful and interesting symposium that will no doubt stimulate the continuation of the work on the control of helminth diseases in the tropics. He highlighted some of the promising developments in the laboratory that were presented, as well as the solid data collection which is in progress under field conditions in various countries.

R.W. Paling

(Readers of EQUATOR who are interested in the details of the presentations can obtain a copy of the 'Abstract book' on a written request to the editorial office).

Molecular characterization and detection of *Cowdria ruminantium*, the causative agent of heartwater in ruminants

On 28 September, 1995, Dr. Arnoud van Vliet defended his PhD thesis, entitled 'Molecular characterization and detection of *Cowdria ruminantium*' at Utrecht University. Dr. Van Vliet studied Medical Biology in Utrecht and started in April 1991 with his PhD research at the Department of Infectious Diseases and Immunology of the Faculty of Veterinary Medicine in Utrecht. His research was supported by a grant of the STD-3 programme of the Commission of the European Union. A brief summary of this interesting work, which has already received international attention (see EQUATOR vol. 7, no. 4/5) is given below.

Introduction

The bacterium *Cowdria ruminantium* belongs to the order Rickettsiales, a group of bacteria quite different from most other bacterial species. Most other bacteria can divide independently, whereas *C. ruminantium* and its relatives can only divide inside eukaryotic cells. This dependency on eukaryotic cells made it extremely difficult to study the rickettsia. It took until 1985 before an *in vitro* cultivation system for *C. ruminantium* became available, which enabled subsequent studies on characterization and detection of *C. ruminantium*.

The disease heartwater

Cowdria ruminantium is the causative agent of heartwater, an often fatal disease of especially cattle, goats and sheep, and is transmitted by ticks of the genus *Amblyomma*. The disease got its name from the exudates found in the pericardial sac, a symptom quite commonly found at post-mortem examination of animals which succumbed to the disease. Heartwater is found on the African continent, south of the Sahara. Indigenous breeds of ruminants are more or less resistant to the disease, but the disease becomes prominent when exotic breeds are introduced. For a long time it was believed that the disease was confined to the African continent, but in 1980 the disease was diagnosed in the Caribbean region. Most probably the disease was imported here in the 18th century when cattle infested with infected ticks was transported from Senegal to the Caribbean region. The *Amblyomma* ticks have spread through the Caribbean region and pose a serious threat to livestock production in South and North America. This has caused an upsurge in the research on diagnosis of and vaccination against *C. ruminantium*.

Heartwater diagnostics

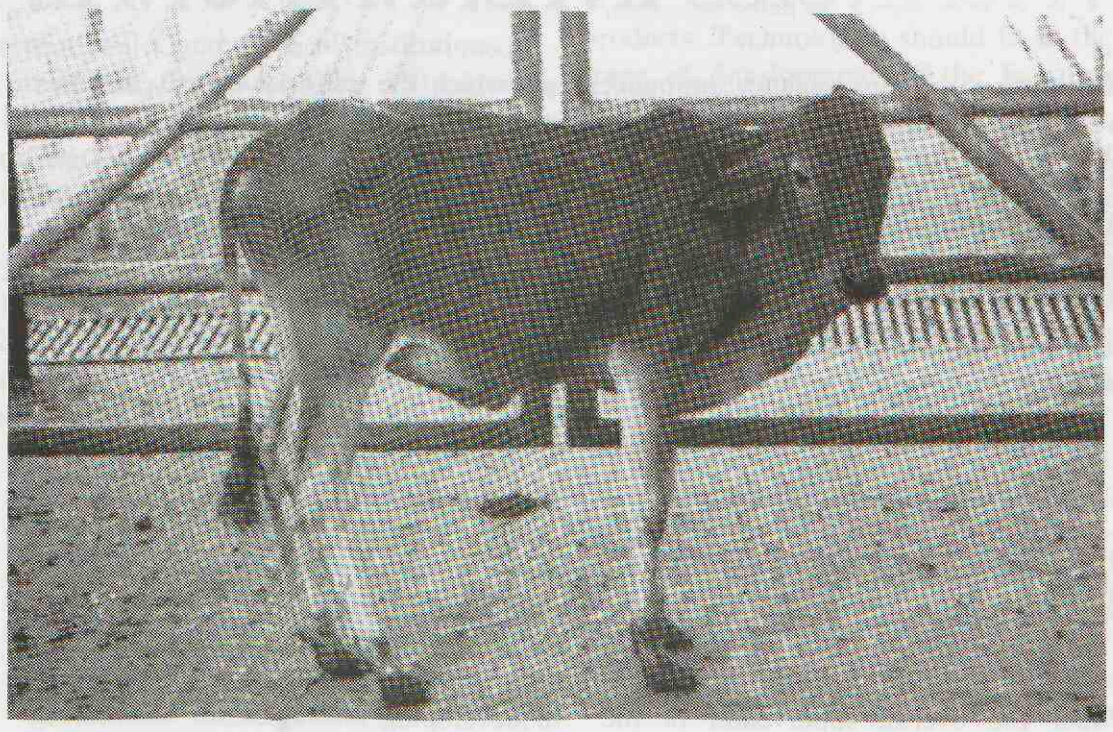
The clinical diagnosis of heartwater is very difficult, as the signs are not specific (e.g. fever, nervous symptoms). Rickettsia can not be diagnosed by normal bacteriological methods, and it is even difficult to find them in post-mortem samples. The first generation of tests developed for the diagnosis of heartwater was based on the detection of *C. ruminantium*-specific antibodies in serum samples. However, there were doubts about the specificity of these tests. A new type of test, developed for the diagnosis of other infectious diseases, uses the Polymerase Chain Reaction (PCR). This test shows the presence or absence of DNA of the infectious agent. At the start of the research presented in the thesis, these tests were not yet developed for the detection of *C. ruminantium*. These problems with diagnosis of *C. ruminantium* infection are responsible for the absence of knowledge on the exact distribution of *C. ruminantium* in both Africa and the Caribbean region. This makes the development of policies for prevention of the spread of *C. ruminantium* difficult.

Aims of the project

The development of an *in vitro* culture system for *C. ruminantium* has enabled further studies on the antigenic and molecular structure of the rickettsia. Recombinant DNA techniques were used to gather knowledge on the rickettsia. With this knowledge improved diagnostic tests were developed and possibilities were created for the development of a vaccine.

Phylogenetic position of *Cowdria ruminantium*

In order to be able to test the specificity of diagnostic tests it is necessary to know which bacteria are related to *C. ruminantium*. The phylogenetic position of *C. ruminantium* was determined. *C. ruminantium* is very closely related to other rickettsial species, mostly *Ehrlichia* species, but also to *Anaplasma* species. The close relation with *Ehrlichia* species was partial-



Clinical diagnosis of heartwater is often difficult (Photo: Paling)

ly expected on basis of morphological and antigenic resemblances, but the relationship with *Anaplasma* species was surprising. Although closely related they infect different cells. The only resemblance between these bacteria seems to be that they are transmitted by ticks or other arthropods. This probably means that all these different bacteria have developed out of an ancestor which was found in the arthropod ancestors of ticks.

Specificity of serological assays for the detection of *Cowdria ruminantium*

One of the proteins of *C. ruminantium* is predominantly recognized by antibodies in sera of animals with heartwater. This protein was designated Major Antigenic Protein (MAP) 1. Several diagnostic tests, based on the recognition of this protein, were developed and tested for their specificity, using antisera to *Ehrlichia* species which are closely related to *C. ruminantium*. It was shown that all tests were not specific for *C. ruminantium*. It was concluded that these tests are not reliable for use in areas where *C. ruminantium* and *Ehrlichia* species can both occur.

Cloning of the gene encoding the *Cowdria ruminantium* Major Antigenic Protein

The gene encoding the MAP1 protein of *C. ruminantium* was isolated and cloned. The gene was further characterized by determination of its DNA sequence. Subsequently the gene was used for the production of MAP1 protein by the bacterium *Escherichia coli*, enabling the production of cheap antigen for serological tests and inclusion in recombinant vaccines.

Development of a *Cowdria ruminantium*-specific serological assay

It was demonstrated that the MAP1 protein is not unique for *C. ruminantium*. The possibility that the protein contained parts that were specific for *C. ruminantium*, was tested. Overlapping parts of the protein were produced and tested for their specificity using antibodies to *C. ruminantium* and *Ehrlichia* species. The conclusions of these experiments were that the MAP1 protein contains two regions: one responsible for the cross-reaction with antibodies to *Ehrlichia* species (designated MAP1-A) and one specific for *C. ruminantium* (designated MAP1-B). A serological assay utilising MAP1-B was developed and tested using sera from Zimbabwe and the Caribbean islands. A much better specificity compared to previous tests was demonstrated. This test is currently further evaluated in the Caribbean region and in Zimbabwe.

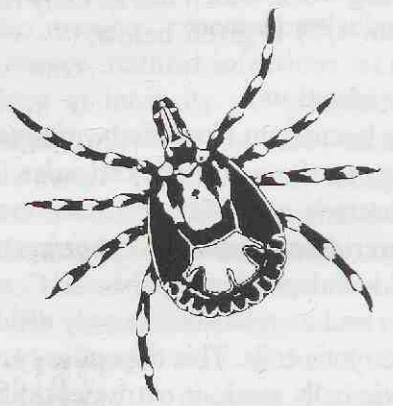
Detection of *Cowdria ruminantium* in healthy Zimbabwean wildlife species

As antibodies to *C. ruminantium* could be detected only during a relatively short period (up to 250 days after infection), doubts remained about the specificity. Also because the test was unable to demonstrate carrier animals. Therefor a PCR assay for the detection of *C. ruminantium* was developed using the MAP1 gene sequence. The PCR assay is a technique capable of amplifying short stretches of DNA of specific organisms and theoretically supersedes the serological assays in sensitivity and specificity.

Wildlife species have been suspected as reservoir hosts for *C. ruminantium*, but this was rarely confirmed. Using the PCR we were able to amplify *C. ruminantium* DNA from blood and bone marrow samples of experimentally infected domestic ruminants, as well as from several wild ruminant species. This wildlife reservoir has to be taken into account when control policies for the disease are being formulated.

It was concluded that the use of recombinant DNA techniques in heartwater research has opened a wide range of possibilities for development of vaccines and improved assays for the detection of *C. ruminantium* in infected ruminants and ticks.

Arnoud van Vliet



(For more information: A. van Vliet PhD, University of Leicester, Department of Genetics, University Road, Leicester LE1 7RH, England, Telefax: +44.116.2523378, e-mail: avv2@leicester.ac.uk).

VACANCIES INTERNATIONAL COOPERATION

This section contains vacancy announcements which the editorial board considers to be of possible interest to Dutch veterinarians. Besides vacancies that will be taken from "Vacatureblad Internationale Samenwerking", "Tijdschrift voor Diergeneeskunde", "Veterinary Record" and "INTRO vacatures", there will be room for personnel advertisements. For further information one is requested to apply directly to the institution or company.

Food and Agriculture Organization of the United Nations (FAO)

Animal Production Officer (f/m)
Genetic Resources Monitoring

Vacancy Announcement No. 651-AGA
Post No. 0060291

Duties

Under the overall supervision of the Chief, Animal Production Service and the general supervision of the Senior Officer (Animal Genetic Resources), assist with the planning and execution of the surveying and monitoring elements of FAO's global Early Warning System for Animal Genetic Resources within the Programme for the Management of Farm Animal Genetic Resources. Specifically, to: assist in developing strategies for monitoring diversity with particular emphasis on developing country genetic resources; maintain the associated databases on FAO's Domestic Animal Diversity information System; maintain the World Watch List for Domestic Animal Diversity; collect and evaluate documents on scientific and technological developments in surveying livestock populations; adapt and transfer appropriate technology to developing countries; assist countries in their programmes for better documenting and monitoring, particularly of indigenous genetic resources; prepare related technical publications; participate in the design and implementation of the Global programme; develop and maintain

contacts with the range of institutions and organizations involved in the Programme, particularly the Programme's National Focal Points, and keep abreast with scientific and technological developments in conservation genetics; perform other related duties as required.

Qualifications
University degree in Agriculture, Veterinary Science, or other related scientific field, with postgraduate specialization in the Animal Sciences. Five years of progressively responsible professional experience in animal production and breeding; knowledge of breeding of most farm animal species; knowledge of and experience with design, implementation and analysis of large-scale field surveys. Broad computing experience.
Initiative and high sense of responsibility; ability to work under pressure and in a team. Ability to communicate effectively both orally and in writing. Ability to establish and maintain effective working relationships with people of different national and cultural backgrounds. Initiative, ability to collate, analyze and evaluate technical and scientific information. Willingness to use word processing equipment. Working knowledge (level C) of English, French of Spanish and limited knowledge (level B) of one of the other two.

Desirable
Experience in international work and in different regions of the world.

Division
Animal Production Service, Animal Production and Health Division, Agriculture Department.

Remuneration
A net annual salary.
With dependents from US$ 53,870 to US$ 69,571. Without dependents from US$ 50,314 to US$ 64,601.
Inclusive of a variable element for post adjustment.

Additional information
Applications from qualified women candidates are encouraged. Please note that FAO staff members are international civil servants subject to the authority of the Director-General and may be assigned to any activities or offices of the Organization.

Location
Rome.

Duration of Assignment
Fixed-term, three years.

Grade
P. 3.

Applicants
Applicants should quote the vacancy announcement number.

Address
FAO Personnel Division, Via delle Terme di Caracalla, 00100 Rome, Italy.
Tel. +39.6.57971; Fax. +39.6.6799563.

Closing Date
12 December 1995.

8th INTERNATIONAL CONFERENCE OF INSTITUTIONS OF TROPICAL VETERINARY MEDICINE EMPHASIZED AGAIN THE IMPORTANCE OF SUSTAINABILITY

AITVM

From 25 - 29 September, 1995 the 8th International Conference of Institutions of Tropical Veterinary Medicine took place in Berlin, Germany. Over 330 participants (of which 20% were students) from 64 different countries found their way to Berlin to share their experiences in working and doing research in tropical countries. Many scientists from outside Europe were enabled to come to Berlin to present a poster or give a presentation through a fellowship provided by the Deutsche Stiftung fuer Entwicklung (DSE) or the Commission of the European Union (EU). Four days of hard work, listening to lectures or participating in workshops were kept in balance by a social programme consisting of sight-seeing tours around Berlin and a trip to a former state farm, a conference dinner and of course by the reunion of old and new friends.

Factors determining livestock development
After the opening session the congress programme continued with plenary papers on varying subjects. The first speaker was K. Peters of the Humboldt University in Berlin. His presentation was on "Trends in development of livestock production systems in tropical countries". He stated that the major factors determining livestock development are population growth, economic development and its associated effect of demand for higher valued livestock products. Technologies should fit in the stage of development of the livestock systems. Because not all livestock systems have the objective of profit maximisation, specific socio-cultural issues may be of importance and add to system complexity. Better methods for decision making and improved linkages with the production sector are thus required to assist the livestock sector meeting its challenges to produce food.

World food supplies
U. Werblow of the Directorate-General for Development of the EU mentioned the big agricultural research challenges the world is facing. With a world population that will exceed 8 billion in the

year 2025, the world food supplies will have to more than double in the coming 30 years. To achieve this, and in the same time to halt the deterioration of the environment and to diminish the enormous differentials between the rich and the poor, a close collaboration between North and South is needed.

Zoonoses

F.X. Meslin of the division of communicable diaseases of the World Health Organisation gave a lecture on zoonoses, global changes and the impact on public veterinary medicine. The close relationship between veterinarians and animals, their environment and human beings makes the profession vulnerable to major changes occurring in any of these three categories. A number of these changes are already under way, like changes in population size and stucture, urbanisation and environmental and climatic changes. Increased prevalence of zoonoses is due to changing lifestyle, increased travelling of both humans and animals, deterioration of public health activities, changes in handling of food and the continuous evaluation of pathogenic organisms and antibiotic resistance. The consequences of these global changes have to be evaluated and this should lead to identification of priorities for future interventions in the fields of zoonoses prevention, control and surveillance, food-borne intoxications and infections, and the future contribution of the veterinary profession.

Livestock production and the environment

C. de Haan of the Worldbank emphasized that livestock production should sustain the quality of the global land, water, air, plant and animal resources. The Worldbank paper on the balance between livestock and the environment seeks to assess objectively the positive and negative effects of livestock on the environment and identify the key policies and technologies which mitigate the negative and enhance the positive effects. De Haan stressed that veterinary and agricultural groups should really invest their energy in investigating these matters, because otherwise other groups, that will only emphasize the negative effects of livestock production, will take over.

Prof. M. Obwolo is the new chairman of the standing committee of the AITVM (Photo: De Gooijer)

Livestock keeping in cities

A. Waters-Bayer of ETC Netherlands, spoke about small-scale livestock keeping in cities. Although livestock keeping in cities can give rise to a number of problems like noise,odours, road accidents and diseases, it provides numerous opportunities for families in all income groups: better nutrition, income security and employment, not only for the animal keepers but also for people operating in informal supply systems. Instead of simply forbidding livestock keeping in urban areas or denying the existence of it, it would be better if authorities found ways to better organize these activities, minimizing the dangers involved and maximizing the opportunities. The challenge for veterinarians confronted with livestock in cities is to interact positively with urban authorities to ensure that they receive correct and locally applicable information and appropriate low-cost inputs, rather than making vain attempts to ban livestock from the cities..

The role of women

M.S. Dicko, an independent consultant from Mali, gave a lecture on the active participation of women in the development of livestock keeping in subsaharan Africa. Depending on their cultural background women dedicate time to the animals and the herd. They are responsible for feeding the animals, milking, treating diseased animals, and processing and commercializing animal products. Despite their keyrole in livestock keeping, the role of women in development projects is still limited. The decision of policymakers to help women realise the important role they play in the development of livestock keeping will in short and in long term be more revolutionary than the fight for their rights in itself.

Education

The last speaker of the first day, W.N. Masiga of the Organisation of African Unity (OAU) in Kenya, defined training needs in less developed countries. The limited resources that exist in the less developed countries should be fully utilized. Veterinarians, who received an expensive education, should be fully employed in the animal health and production field. Routine duties can be carried out by technicians. Training for a professional career, be it graduate, undergraduate or post graduate, should be target oriented. This means oriented towards the specific needs of the people and towards the specific problems of the region.

Workshops

On Tuesday and Wednesday the participants of the congress were divided in three groups, each group elaborating a different workshop subject. It was not easy for the chairpersons and the moderators to conduct discussions with groups of so many people. But on Friday, after a day of hard work, while in the mean time the congress participants were enjoying the excursion to Berlin, they presented a long list of conclusions and recommendations.

Peri-urban livestock production

The first goal of the workshop on "Peri-urban livestock production and development" had been to clarify the concept of 'peri-urban livestock production'. It was impossible to provide a clear-cut definition, but the following characteristics of this type of livestock production were defined:

- easy access to the market (both for inputs and for selling products);
- relative close to population centres which create demand for the livestock products;
- managed by people who handle economic resources relatively better and

who are motivated to increase their income;
- to some extent also managed by poor households who are seeking additional means of income for survival.

Recommendations were made on both the policy and research level. Policies on peri-urban livestock production have to be part of the overall agricultural policy, and governments should adequately invest in infrastructure to reduce unit production costs and to provide incentives to those involved in the production process. Governments have to recognize the importance of peri-urban livestock production in their development policies.

Research should be conducted in the field of zoonoses, especially in non-conventional animals, and on the impact of peri-urban livestock production on the environment and public health. Furthermore the economic and nutritional impact of the system has to be investigated.

Epidemiology and socio-economics

The second workshop was on "Disease epidemiology and socio-economics in different live-stock systems". Here, it was concluded that the available disease control and prevention methods are fairly good, but that their effectiveness and efficiency could be improved. Farmers' participation should be further encouraged. Disease reporting and surveillance are important in disease control, improved data collection and analysis are needed.

The migratory aspect of nomadic livestock production systems is a constraint to the delivery of veterinary services. Health services should therefore be adjusted to the needs of the nomads. If land security was given to the nomads they would be able to properly utilize this land and protect it from degradation.

Zoonoses are a serious problem in different livestock systems, especially among nomadic communities, control measures are to be improved and there should be a better cooperation between veterinarians and human health professionals in epidemiological studies, diagnosis and control.

Impact of livestock on the environment

The third workshop, on "The impact of livestock on the environment", expressed the growing concern for environmental issues related to livestock production and sustainable management of resources. The general agreement was that there is too much emphasis on the negative aspects of the relation between livestock and environment. It was recommended that national governments, donors and development agencies ensure active participation of all relevant groups during the whole process of assessing environmental impact, as well as in planning, implementing and evaluating livestock development activities. Special promotional activities are needed in order to enable women and marginal groups to join this participatory process. Research and educational institutions will have to increase attention to environmental issues related to livestock production.

Livestock services delivery systems

The fourth workshop discussed how to "Increase the efficiency of livestock services delivery systems". Many recommendations were formulated, defining the tasks of the local governments and the tasks of the veterinary services. Where possible a gradual privatisation of delivery services should be facilitated. To be able to pay for these privatised services, the smallholders must create new sources of income. Paraveterinarians play a key role in supplying veterinary services to the farmers. However, they should operate under the supervision of a licensed veterinarian and they should be regarded as complementory rather than as competitive to the veterinarian.

Role of women in animal husbandry

The fifth workshop identified "The role of women in animal husbandry", and the constraints on women in livestock production. Recommendations to rural women were to make use of their knowledge of traditional livestock keeping; to organize themselves in cooperatives and self-help groups, to stimulate gender awareness through formal and informal education, to use an integrated approach to improve man-woman communication, to organise trainings and to develop neighbourhood markets. Female professionals should work directly with rural women, to introduce relevant technology and to improve communication. Women should participate in research and planning. National governments are advized to integrate gender issues into livestock policies and to adopt a holistic approach.

Training needs

The participants in the last workshop discussed "Training needs, demands and facilities in less developed countries". Attention was focused on the profile of veterinary education, development of research activities and regional collaboration between national institutes.

Industrialized countries should assist less developed countries in the development of training and research. It is necessary to assess the needs for training executives in livestock production in a qualitative (appropriate profile for the different job possibilities) and a quantitative way. For this purpose the AITVM should form a group of specialists that will elaborate a methodology for determining the professional profiles and the demands of the users.

A unique event

After the presentation of the workshop

Message from the Standing Committee of the AITVM

The Standing Committee of the Association of Institutes of Tropical Veterinary Medicine (AITVM) is composed of 10 members who are based at veterinary faculties or institutes in Europe, Africa and Asia and one associated member from Ivory Coast. During the AITVM Conference in Berlin the Standing Committee met on 2 occasions. During the first meeting Prof. Dr. Dieter Mehlitz of the Institute for Parasitology and Tropical Veterinary Medicine of the Free University of Berlin, who is the Secretary of the Standing Committee and the organizer of the Berlin conference, reported on the state of affairs of the preparations for the Conference. During the second meeting, which was held just before the closing of Conference Prof. Dr. Dik Zwart of the Agricultural University of Wageningen laid down his membership as he had retired some months earlier. Because of his major contributions to the Association and as the last founding member of AITVM still active in the Standing Committee, he was made 'Honorary member of the Standing Committee of AITVM'. His successor on the Committee will be Dr. Robert Paling of the Faculty of Veterinary Medicine of Utrecht University. Furthermore, the chairmanship of the Standing Committee, which was in the hands of Prof. Dr. Stanny Geerts of the Institute of Tropical Medicine of Antwerp, was handed over to Prof. Mark Obwolo, dean of the Faculty of Veterinary Science of the University of Zimbabwe. Prof. Geerts became the vice chairman. In his first speech as chairman of the Standing Committee Prof. Obwolo announced to the Conference that he will investigate the possibility to host the next AITVM conference in Harare.

results and the closing ceremony on Friday, it was time to go home. The meeting in Berlin completely achieved its goal, namely to be a platform for scientists to pass on knowledge. With 337 participants, attending 7 plenary sessions, 94 short communications and 73 posters, this congress can be seen as a unique event were people from different disciplines share their knowledge, experiences and results in animal production and tropical veterinary medicine. Above all this, the congress provided the opportunity to meet friends from many different countries.

Merel Langelaar

THE CURRENT STATUS AND PRIORITIES OF RESEARCH ON THE EPIDEMIOLOGY AND CONTROL OF HELMINTH INFECTIONS OF RUMINANTS IN WEST AFRICA[1]

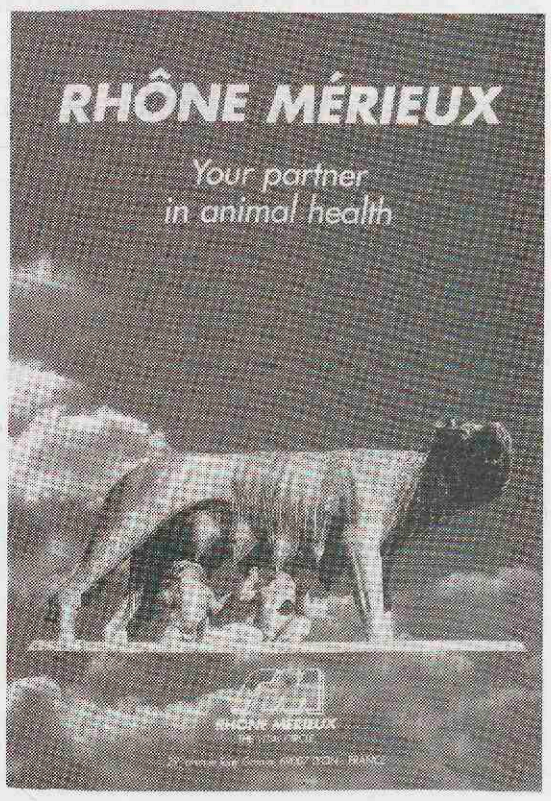
Helminth infections and their associated diseases are among the most prevalent and widely distributed of all the enzootic parasitoses of tropical livestock. Infections in ruminants are characteristically chronic and insidious in nature and in West Africa, in particular, have attracted very little attention, including research funds, when compared with viral, bacterial and some protozoal diseases. This is in spite of the fact that they undoubtedly exert a heavy toll on the health and productivity of this vitally important livestock resource, with obvious implications for the rural and national economies of the region. Accurate and up-to-date estimates of its socio-economic impact are lacking in all the 17 countries of the region but economic losses are believed to arise through poor growth rate and feed conversion, reduced meat and milk yield, carcass and offal condemnation, impaired reproductive efficiency and, in some localities, loss of draught power. Nevertheless there is currently useful basic epidemiological data on the more important infections which, if properly evaluated and applied, could form a basis for the planning of appropriate control schemes in most of the geo-climatic zones of the region. This information is summarised in this presentation, which also identifies some areas of epidemiological research requiring priority attention, with particular reference to the three most prevalent and economically important helminth infections of domesticated ruminants in the region namely, parasitic gastro-enteritis (PGE), fasciolosis, and *Taenia saginata* cysticercosis.

Parasitic gastroenteritis

Naturally-occurring PGE is a gastroenteropathy caused by mixed infections with several species of gastro-intestinal (GI) nematodes. Under traditional pastoral and sedentary village husbandry, which are the dominant systems of production in the region, it generally manifests as a chronic or subclinical syndrome. However, clinical disease is rather common in intensive systems of production, or when traditionally managed animals are inadvertently exposed to heavy infections, either during prolonged indoor confinement in unhygienic conditions or following restricted/zero-grazing of heavily contaminated pasture/fodder. *Haemonchus* and *Cooperia* species (in cattle), *H. contortus* and *Trichostrongylus colubriformis* (in small ruminants) are the most important causative nematodes in most field outbreaks.

The transmission, incidence and intensity of infections are determined by several environmental, host- and parasite-dependent influences and phenomena, the most dominant of which are: meteorological factors; methods of husbandry and systems of livestock production; host age, nutrition and acquired immunity; larval hypobiosis and concurrent infections. Thus, in the Sahel and dry savannah zones, which are the major livestock-raising areas of the region, PGE is essentially a rainy season phenomenon since transmission of infection occurs only during the relatively short rains. Consequently, the most important strategy for the survival of parasites from one rainy season to another is by means of larval hypobiosis and most species are able to complete only one or two generations a year. By contrast, in the humid zone year-round development and transmission of infection readily occur, with up to four parasite generations a year and virtually no arrested development takes place.

Similarly, the variety of modern and traditional methods of husbandry practised in the region present contrasting opportunities for contact between host and parasite, with corresponding differences in the frequency and duration of such contacts. These differences largely account for the considerably greater risk of infections under the former methods of husbandry and production. Moreover, intensification under this method of husbandry is



1 Paper presented at the 6 th symposium on 'Tropical Animal Health and Production. Helminth diseases of ruminants: diagnosis, epidemiology and control', Utrecht, 6 October, 1995, Programme and abstracts, pp. 8-14.

Prof. S.N. Chiejina advocated co-operation and teamwork as basis for future multidisciplinary studies (Photo: De Gooijer)

rarely backed up by appropriate worm control measures. Malnutrition, host immunity and concurrent infections exert powerful modulatory influences on the pathogenicity and chronicity of the concomitant nematode infection. Host age is also very important, particularly with regard to *Toxocara vitulorum* and *Strongyloides papillosus* infection.

Hardly any kind of formal PGE control is practised in most traditional systems of production. This is due to several factors notably: (1) the insidious nature of infections and the lack of awareness by livestock owners of the dangers posed by worm infections; (2) the relatively high cost and scarcity of modern anthelmintics and; (3) the inaccessibility of many village, nomadic and transhumant stock to modern veterinary care, where one exists.
Some organised routine worm control is, however, practised in large intensive enterprises. Here, anthelmintic treatment is the favourite and often the only control measure. Grazing management and integrated control strategies which require considerably more experience, skill and detailed epidemiological knowledge to implement, are generally impracticable in most situations.

Although several anthelmintic treatment programmes have been recommended or tried under field conditions, none has been subjected to detailed and extensive field evaluation and validation. Consequently, there are no ready-made or made-to-measure programmes that can be recommended for any given locality in the region. Probably the commonest use of anthelmintics in the area is for the control of on-going outbreaks. Strategic dosing to take advantage of the natural and predictable seasonal sterilising effect of the long dry season on pastures in the sahel and parts of the savannah zones does not appear to have been fully exploited. Fortunately, and perhaps surprisingly, anthelmintic resistance does not seem to constitute a problem in any part of the region, in spite of the lack of professional guidance and supervision in their use, coupled with the ineffective and, in some cases, non-existent official control of the licensing and sale of these drugs.

Fasciolosis

Fasciolosis, which sometimes occurs concurrently with other trematodoses such as dicrocoelosis, paramphistomosis and schistosomosis, is probably the most important single helminth infection of ruminants in the sahel and savannah zones. The only known natural intermediate host of the causative trematode, *Fasciola gigantica*, is the aquatic snail, *Lymnaea natalensis*, which can only develop and thrive in large, slow-flowing, clear, permanent bodies of water with abundant vegetation and oxygen. Consequently, fasciolosis is virtually unknown, as a veterinary problem, in the arid zones of West Africa. By contrast, ideal habitats abound in the main livestock raising areas, in the vicinity of permanent pools, lakes, streams, irrigated land, waterholes and flood plains, which are often the only sources of food and drinking water for pastoral nomadic and transhumant stock during the dry season.

As with PGE, the epidemiology of fasciolosis in the region follows clearly defined patterns which are determined primarily by seasonal climatic factors, the availability of suitable snail habitats, the biology of *Fasciola* and its snail vector, methods of animal husbandry, host age, nutrition and response to infection. The prevalences of infection and clinical disease are also higher in intensively managed stock and sedentary traditional stock than in true nomadic herds and flocks. However, by contrast with PGE, fasciolosis is usually a dry season disease in the sahel and savannah zones and only light infections occur during the rainy season. The increase in fluke burdens at the start of the dry season coincides with the annual migration of nomadic and transhumant stock to, and overcrowding of, the few available and restricted grazing areas, which quickly become heavily contaminated with fluke eggs at a time when there is a corresponding increase in snail populations and herbage meta-cercarial density. Herbage infestation remains high throughout most of the dry season, giving rise to acute disease, particularly in small ruminants, during early to mid dry season. However, field observations have shown that this general pattern may be altered in times of prolonged drought, concurrent infections, malnutrition and other stressful conditions.

Control of fasciolosis is beset with the same problems and constraints mentioned in connection with the control of PGE. This is further complicated by the peculiar problems posed by the extensive, often distant, inaccessible and ill-defined snail habitats as well as by the enormous financial and technical problems which molluscicidal treatment of such habitats would entail. Not surprisingly, most recommended and attempted routine and strategic control give priority to anthelmintic treatments. However, the feasibility, let alone the practical benefits, of any of these recommendations, especially under traditional systems of production, have yet to be demonstrated.

***T. saginata* cysticercosis**

Seven cestode parasites are known to be common in ruminants in West Africa. However, the most important, economically, are the metacestodes of *T. saginata* and *Echinococcus granulosus*. Point prevalence surveys and official abattoir statistics from many countries suggest that *T. saginata* cysticercosis is widespread in virtually all the countries, with prevalence rates of up to 22% in some location. Although these observations were made several years ago and very little data is available on the current situation it is unlikely that the situation has changed significantly from that portrayed by the existing records.
High endemicity of *T. saginata* cysticercosis is generally associated with poor socio-economic development and stan-

dard of personal hygiene; environmental pollution with raw or inadequately-treated human waste; consumption of under-cooked infected beef; inadequate abattoir facilities and poor meat hygiene practices. Environmental contamination with tapeworm eggs is common in rural communities, nomadic settlements and some urban communities where there are lack of sanitary facilities and/or efficient methods of sewage treatment, resulting in the disposal of infected human waste on to farm land and water courses accessible to cattle. Contaminated hands and clothing of infected farm personnel is believed to be an important method of neonatal infection in endemic areas. However, the extent and significance of these sources and methods of transmission of infection have not been clearly established in any part of the region. On the other hand, field observations have shown that there is a significant inverse relationship between age of cattle and the prevalence of live cysts. Consequently, very few live cysts are normally encountered at meat inspection in very old animals which form the majority of animals slaughtered for human consumption.

Effective control of *T. saginata* cysticercosis must therefore address, among other things, the problem of human taeniosis and its associated environmental pollution with human waste; the control of metacestode infection in cattle, improvement of the general socio-economic status of the people, standard of public health awareness and education, especially among cattle rearers and butchers whose co-operation and understanding are crucial for successful implementation of modern meat hygiene practices. The only specific control option currently being implemented in all the countries, with varying degrees of success, is meat inspection. However, it is probably true to say that, with the exception of the major urban centres in these countries, the bulk of the beef sold to the rest of the public derive either from inadequately inspected meat or from uninspected, privately or clandestinely slaughtered animals. Nevertheless, in spite of the lack of effective control programmes the prevalence of human infection appears to be low in many rural and urban areas, at least in some countries such as Nigeria. Three factors may have contributed to this: (1) the relatively low beef consumption by large sections of the population, especially the young; (2) the low infection rate in the predominantly old cattle slaughtered for meat; (3) traditional home-cooking is usually thorough.

Research needs and priorities

It is evident that, with a few exceptions, much of the available epidemiological data and information are of a basic and general nature, and those on cysticercosis in particular are based mainly on point prevalence surveys of slaughter animals, conducted some 10 to 20 years ago. Very few large-scale, long-term and controlled studies have been conducted. More importantly, there is a noticeable decline in the quantity, quality and momentum of epidemiological research during the past 5 years. Some of the areas requiring urgent investigation include the following: (1) the economic impact of chronic and subclinical helminthosis, with particular reference to PGE and fasciolosis in traditionally-reared stock; (2) appropriate and cost effective measures for the control of helminth infections in traditional systems of production and the evaluation of strategic anthelmintic treatment programmes for the control of infections in intensively managed herds and flocks; (3) improved diagnostic techniques, including the use of biomolecular technology and enzyme immuno-assays for the ante-mortem diagnosis of metacestodoses, to complement meat hygiene measures; (4) the relationship between host genetic variability and acquired resistance to GI nematodes; (5) host-parasite relationships, with emphasis on the influence of malnutrition and concurrent infections on the immunological responses, health and productivity of the host.

Furthermore, future studies should emphasise multidisciplinary, large-scale, on-farm and laboratory studies. This will require, among other things, team work and a coordinating centre, backed up by efficient data storage, processing and communication facilities. Unfortunately it seems unlikely that any major and sustainable research programmes can be initiated in any of the countries at the moment without substantial external financial, technical and logistic assistance, in view of the current state of their economies which, in some cases, has been exacerbated by an apparently endemic geo-political instability.

Prof. S.N. Chiejina

(Department of Veterinary Parasitology and Entomology, University of Nigeria, Nsukka, Nigeria. Present address: Department of Life Science, University of Nottingham, Nottingham NG7 2RD, UK).

CALENDAR 1996

Salt Lake city, USA
7 - 9 January, 1996
Annual Conference of the International Embryo Transfer Society (IETS). Location: Salt Lake City, Utah. Information: Mr. Carl Johnson, International Embryo Transfer Society, 309 W. Clark Street, Champaign, Il 61820 (Tel. : +1.217.3563182, telefax: +1.217-.3984119).

Maisons-Alfort, France
12 February - 8 March, 1996
International training course on sheep and goat health and production. Information: CIPPOC/CIRAD-EMVT, Division de l'enseignement, 10, rue Pierre Curie, 94704 Maisons-Alfort cedex (Tel.: +33.1.43688873, telefax: +33.1.43752300).

Barneveld, The Netherlands
26 February - 24 May, 1996
18th Animal Feed Training programme (AFTP). Organized by: IPC Livestock, Barneveld College. Candidates may enter following completing of one of the international IPC animal husbandry courses. Direct entry is also possible. Programme includes theoretical and practical subjects, traineeships, workshops etc. Subjects: technical, nutritional, organizational and economic aspects of animal feed production. Fees including board and lodging: Dfl. 12,000 or 14,500 (direct entry). Information: IPC Livestock Barneveld College, Dep. of International Studies and Cooperation Programmes, P.O. Box 64, 3770 AB Barneveld (Tel.: +31.-342.414881, telefax: +31.342.492813, e-mail: ipcbarvr@knoware.nl).