TOWARDS SUSTAINABLE CBPP CONTROL PROGRAMMES FOR AFRICA

FAO-OIE-AU/IBAR-IAEA Consultative Group on Contagious Bovine Pleuropneumonia
Third meeting, Rome, 12---14 November 2003
TOWARDS SUSTAINABLE CBPP CONTROL PROGRAMMES FOR AFRICA

FAO-OIE-AU/IBAR-IAEA Consultative Group on Contagious Bovine Pleuropneumonia
Third meeting, Rome 12–14 November 2003
FOREWORD

The Contagious Bovine Pleuropneumonia (CBPP) Consultative Group meeting is an officially recognized gathering of the relevant scientific community with recognized expertise and knowledge of CBPP. The meetings are the joint undertakings of the Food and Agriculture Organization (FAO) in collaboration with the Office International des Epizooties (OIE), African Union/Interafrican Bureau for Animal Resources (AU/IBAR) and the joint Division of the International Atomic Energy Agency (IAEA). Regular meetings of an ad hoc Expert Panel, as it was formerly known, were held in the sixties where experience with the performance of CBPP diagnostic techniques, various control measures and strategies, were exchanged and debated on. Recommendations that arose from these meetings were then disseminated across the world, especially to countries where the disease is of particular significance. Apparently, the last gathering of the Ad Hoc group was in 1970 when the eradication of CBPP from Australia was complete and the situation in Africa seemed to be under control. Dr Alain Provost chaired this meeting.

In recent years, there has been an upsurge in the incidence of CBPP in Africa to an alarming level reminiscent of that of the early 1960s. This situation prompted a similar meeting of an expert panel, now called the CBPP Consultative Group that met in Rome in October 1998, to update the current knowledge of CBPP in recognition of the fact that CBPP had become the major cattle disease in Africa. The second meeting of this group was held in October 2000 and it reported a worsening CBPP situation. The group considered scientific and technological advances and tools necessary to aid in the control of CBPP against the background of rural poverty and an increasing global demand for meat, milk and other animal products. Efforts were directed towards designing effective and realistic strategies that could lead to control of CBPP in Africa.

In 2003 the Meeting of CBPP Consultative Group involved field veterinarians, laboratory diagnosticians, researchers, policy makers and international partner institutions that drew its expertise from national diagnostic laboratories in African countries and internationally from reference laboratories and individuals. This report provides an account of the presentations made at the Third CBPP Consultative Group Meeting, the recommendations made, summaries of discussions and contributed reports from each presenter. Progress made with diagnostic tests that may aid surveillance and research advances that may be useful for epidemiology and vaccine development are reported in this proceedings.
CONTENTS

Opening Address 1

Posthumous Presentation of Silver Medal to Dr. A. Provost 3

Principal Objectives of the Consultation and Expected Outputs 4

Summary of Recommendations 5

Sustainability of FAO Technical Support for Contagious Bovine Pleuropneumonia (CBPP) 7

Summaries of Presentations and Discussions
  CBPP control strategies 13
  Tools for CBPP control – vaccines 15
  Tools for CBPP control – use of antibiotics and diagnostic tests 17
  Country specific control strategies 20

Closing Remarks 23

Recommendations 24

List of participants 30

Annexes
  Agenda 39
  Group Photograph 43
  Individual Presentations 44
Mr. Chairman, Ladies and Gentlemen,

It is indeed an honour and pleasure to be asked by the Animal Health Service (AGAH) of Food and Agriculture Organization of the United Nations (FAO) to give the opening address at the Third Consultative Group Meeting on contagious bovine pleuropneumonia (CBPP). It is my fervent hope that this gathering of eminent scientists, field officers, laboratory diagnosticians and representatives of the international community will put their ideas together and provide practical solutions that address the theme chosen for this meeting; “Towards sustainable CBPP control programmes for Africa”.

According to Office International des épizooties (OIE) reports, CBPP is essentially confined to Africa. The effect of the disease on beef, milk and crop production through the use of plough oxen is devastating with particular implications for food security and poverty levels within countries affected by CBPP. The onerous responsibilities of ensuring sustainable control strategies for the disease so as to support and improve the livelihoods of many in Africa who depend on cattle farming for sustenance, relies to a large extent on the outcome and follow up actions emanating from this meeting.

We in the Emergency Operations Service (TCEO) of FAO have responsibility for ensuring that projects and activities categorised as emergencies are designed to meet urgent and immediate needs arising from unexpected calamities including animal disease outbreaks, which affect or are expected to affect food and agricultural outputs of countries. The emergency interventions from TCEO are directed essentially towards resumed productivity or the containment for the decline in productivity. It is in this connection that the synergy between the activities of EMPRES – Livestock in progressive control of transboundary animal diseases and that of TCEO are to be viewed or assessed. Some of us are aware of the difficulties some countries face in convincing national treasuries to finance veterinary/livestock services in the absence of epidemic diseases such as CBPP. Secondly, we also recognize the difficulties for national veterinary services to convince governments to finance effective prevention and progressive control of livestock epidemic diseases against a backdrop of competing immediate needs of social, health, education and other agricultural systems on national treasuries.
Despite these recognitions, sustained livestock production and trade in livestock products are practically impossible in the presence of epidemic diseases such as CBPP. This particular disease as you all know, has contributed to great economic losses and thus to increased poverty levels in many parts of Africa. Those of us in FAO look to a deep analysis and critical assessment of various control options at this meeting. Your recommendations on how to sustain control strategies for CBPP that could lead to the reduction of poverty will be eagerly expected.

At this juncture, let me digress from the focus of my address to pay a brief tribute to a colleague who has served the FAO Animal Health Service for almost 12 years as Chief of that Service and is due to retire from FAO in two weeks time. He is – Dr. Yves Cheneau. This meeting being perhaps one of his last official international engagements in AGAH as a staff member, I take this opportunity to acknowledge his high sense of duty, dedication and professionalism and to wish him well in retirement.

Ladies and Gentlemen, the task before you is daunting especially given the tract record of CBPP control in Africa and the current situation of further spread of the disease especially in Southern Africa. However with the calibre of technical personnel present at this meeting, I am confident that innovative ideas on sustainable strategies for CBPP control will be forthcoming.

I declare the meeting duly open and wish you fruitful deliberations.

Thank you.
Posthumous Presentation of FAO Silver Medal

by

Dr Y. Cheneau, Chief-Animal Health Service, AGAH

to

ALAIN PROVOST

A Tribute from the Animal Health Service of the Food and Agriculture Organization (FAO) of the United Nations (UN)

This silver medal from the Food and Agriculture Organization (FAO) is presented posthumously to Dr Alain Provost, a distinguished international expert in tropical animal diseases.

Dr Alain Provost’s research work on contagious bovine pleuropneumonia (CBPP) will forever remain part of the foundation of fundamental research in the control of CBPP from the world particularly, his scientific contributions in the development of CBPP vaccines.

Dr Provost has on many occasions served as FAO’s International Expert on CBPP disease to many countries in Africa. Author of numerous publications on CBPP and other tropical diseases such as rinderpest, Rift valley fever, heartwater and others, he maintained very useful collaborative research relationships with his scientific colleagues and peers.

This medal is presented to Alain Provost in recognition of his distinguished services to FAO in particular and to humanity in general.
Principal Objectives of the Consultation and Expected Outputs

Dr. J. Lubroth,
Senior Officer, EMPRES

The Consultative Group Meeting for CBPP is unique in character in that it brings together field veterinarians, laboratory diagnosticians, researchers, policy makers and international partner institutions such as the AU-IBAR, OIE and the FAO/IAEA Joint Division. The meeting attempts to synthesise scientific (technical experience and ideas) coupled with practical field experience in the hope of coming to a common consensus on the way forward in the protection of cattle for the progressive control of contagious bovine pleuropneumonia (CBPP). That being the case, the responsibility on this group is tremendous considering the present epidemic situation of CBPP in Africa. The cross fertilization of ideas, technical exchanges, forceful interpretation of the way forward in CBPP control have at times led to sterile debates and arguments that have unfortunately, led to less than productive meeting outcomes. Today, CBPP has invaded parts of countries in Africa where the disease has not been reported for over half a century. We must, as a technical group, make a difference for the better by:

- Developing and suggesting novel workable strategies for the control of CBPP in the light of new technical information some of which will be presented at this meeting. Something new that is workable and takes cognisance of present day realities in economic trends in animal disease control are essential outputs expected from his meeting.

- Ensuring that, in the face of challenges to national veterinary services in down sizing, restructuring and dwindling resources, the capacities for early warning and early response to CBPP incursions are not lost. Concepts such as tackling control of transboundary animal diseases including CBPP at source should be thoroughly explored in defining disease control strategies for CBPP in the future.

- Ensuring that experience of what has worked or not worked in the past should form an important component for suggesting sustainable strategies for CBPP control.

- Promoting CBPP control on the basis of improving national cattle production and also in reducing the risk of spread of the disease to neighbouring countries based on critical analysis of particular risk factors responsible for the spread of the disease. The current outbreaks of CBPP in the Caprivi strip of Namibia where the disease was last reported in 1939, and in Eritrea are worrisome because of severe implications for potential spread of CBPP to Botswana, Zimbabwe and other SADC countries currently free from the disease.

- Finally, it is essential to re-enforce the need to work with cattle producing communities in finding effective mechanisms for CBPP disease containment because of implications for food security and improvements in livelihoods.
Summary of Recommendations

CBPP Control Strategies

- Strategic control of CBPP should be progressive and based on impact assessments and cost benefit analyses done with appropriate methods including participatory techniques to cover regional, national and zonal levels.
- PANVAC and the production of CBPP vaccine should be internationally accredited.
- Research into antibiotic treatments, vaccines and their targeted delivery and diagnostic tools should continue.
- Pilot projects to assess the effectiveness of antibiotic treatments and elective vaccination should be conducted.
- CBPP should be a model for the improvement of veterinary services and public/private partnerships.
- Mathematical modelling should be used in CBPP research.
- Adequate funding should be available to control CBPP in sub-Saharan Africa.

Tools for CBPP Control – Vaccines

- PANVAC should assume a central role in the research and improvement of vaccine production, formulation and its proper reconstitution.
- AU/IBAR should financially empower PANVAC to enable compliance to OIE and other manufacturing principles for vaccine production and certification.
- Research into the improvement of vaccines should continue and include the possibility of differentiation between vaccinated and non-vaccinated animals.
- OIE and FAO should be sent a list of CBPP vaccine producers and performances as established by PANVAC.

Tools for CBPP Control – Use of Antibiotics and Diagnostic Tests

Diagnostic Tests

- The prevalence of CBPP should be established by serological surveillance.
- Serological, clinical and pathological investigations should be performed to confirm the absence of CBPP.
New outbreaks should be confirmed by the isolation and identification of *Mycoplasma mycoides* subspecies *mycoides* small colony variant (*MmmSC*), because currently available serological tests are inadequate for individual diagnosis.

Research must be conducted to establish the effects of antibiotic treatment and multiple vaccinations on CBPP.

Robust penside tests must be developed including those based on the detection of CPS antigens.

Standardised reagents and quality control sera should be introduced by FAO/IAEA into Africa for the CFT.

Immunoblotting test should be considered during the critical phases of CBPP control programmes.

Serological tests that differentiate vaccinated from non-vaccinated animals should be developed.

The general quality assurance scheme for CBPP diagnostic reagents should be devised by FAO/IAEA.

**Antibiotics**

- Pilot trials: PACE and FAO should instigate pilot trials to assess the effectiveness in the field in Africa of antibiotics and chemotherapeutic agents against CBPP.
- Studies on Microbial Sensitivity: The VLA should be requested to carry out *in vitro* studies to establish the MIC of relevant antibiotics to African *Mmm* SC strains.
- Studies on the Safety and Impact of Antibiotics on the Consumer: Systems to monitor antibiotic residues in meat and recommendations for antibiotic use in animal productions systems should be followed.
Sustainability of FAO Technical Support for Contagious Bovine Pleuropneumonia Control

Dr. W. Amanfu,
Animal Health Officer (Bacterial and Zoonotic diseases), AGAH

Introduction

A precise definition of the term sustainability is difficult to obtain. The closest that seems to address the issue of sustainability and relates to FAO’s strategic interventions to control animal diseases such as contagious bovine pleuropneumonia (CBPP) is that of Gro Harlem Brundtland in which she states “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. This definition contains two key concepts, namely:

- The concept of ‘needs’, in particular the essential needs of the world’s poor to which overriding priority should be given; and,
- Limitations imposed by the state of technology and social organization on the environment’s ability to meet present and future needs” (1).

Applying Brundtland’s definition to the control of animal diseases, it could be argued that the greater burden of sustainability of FAO technical assistance projects in CBPP and other animal disease control lies in a partnership approach involving governments, the donor community and FAO in which the needs are addressed together with the application of the appropriate technology to solve animal disease outbreak problems.

CBPP has been a major cause of cattle mortality and production losses in many parts of Africa. Being an OIE List A disease and with implications for rapid spread between herds and across international borders, CBPP has engaged the attention and resources of the FAO for many years in attempts to curb the spread of the disease and limit its devastating economic effects, especially at the village or community level. The institution of FAO Emergency Prevention System for Plant Pests and Diseases (EMPRES) programme in 1994 by its Director General, Jacques Diouf, provided additional impetus for the progressive control of CBPP among six other priority animal diseases. The main objective of the animal diseases component of EMPRES is to assist member nations of the FAO in the progressive control of the major epidemic diseases of livestock through facilitating effective implementation of national and regional control strategies (early warning and early reaction systems and enabling research) within an environment of international co-ordination and cooperation. Since its inception, EMPRES precepts have been consistently applied in attempts to curb the outbreaks of the disease in Africa. This paper assesses the current epidemiological situation of CBPP in countries that have benefited from FAO technical assistance in the control of the disease and to draw lessons from the current situation of the disease in those countries that could be crucial in the evolution of sustainable control strategies for the future.

*The OIE plans to change the animal disease list system to a single list in the near future.*
General Epidemiological Observations

CBPP is caused by *Mycoplasma mycoides* subspecies *mycoides* SC (small colony, variant) (*Mmm* SC). The disease is present in West, Central, East and parts of Southern Africa but not North Africa (4). From a historical perspective, CBPP was a disease of Europe and Asia. A comprehensive historical account of the spread of CBPP in view of the economic significance of the disease in Europe and Africa in the 19th century has been provided by Windsor (5). With the near eradication of rinderpest in Africa (except the Somali ecosystem), CBPP has become the most significant epidemic disease of cattle in Africa with 22 countries reporting outbreaks of the disease in 2003 (4). The disease was present in the Iberian Peninsula [(Portugal-1999, declared free in 05/2003 at the 70th session of the OIE, Spain-1994) and Italy (1993)] during the past decade. The presence of the disease in Asia has not been clearly defined although Myanmar (1995) and other countries Bangladesh (1997), China (1996), Qatar (1997), Kuwait (1991) reported the disease for the last time in the years indicated against their names (4). India, as recently as October 2003 (4), declared herself provisionally free from CBPP (with vaccination). The disease has never been reported in South America.

CBPP is spread by direct contact between infected and susceptible cattle. Introduction of the disease into susceptible cattle populations results in widespread mortality. In the chronic stage, the disease is insidious in nature with variable clinical course that makes epidemiological study of CBPP based on clinical manifestation alone, difficult. Molecular epidemiological studies conducted by Lorenzon *et al.* (3) on 44 strains of *Mmm*SC obtained from wide geographical sources, demonstrated three distinct lineages of *Mmm*SC circulating in Africa. This tool, termed multilocus sequencing analysis, could be useful in distinguishing between different types of *Mmm* SC, especially in countries carrying out control/eradication programmes and requiring tools to trace the origin of remaining or re-emerging CBPP foci.

FAO’s Technical Cooperation Programme

The Technical Cooperation Programme (TCP) of FAO was launched in 1976 as an essential tool to make FAO’s specialized competence more readily available to member countries for the solution of their most pressing development problems in the agriculture, fisheries and forestry sectors. Through TCPs, FAO allocates limited, but identifiable resources to fulfil one of its key constitutional functions, i.e. to provide such technical assistance as governments may request. It is an integral part of the Organization’s Regular Programme, financed from its assessed budget. In particular, TCP is the instrument that enables FAO to respond rapidly to urgent needs for technical and emergency assistance in member countries and to contribute to their capacity building. The main features of TCP are its extemporised and urgent character; its flexibility in responding to new technical issues and problems, clear focus, limited project intervention with short duration, low costs, and practical orientation, and as a catalytic role for in-country or region uptake. By design and in practice, TCP meets unforeseen needs, fills critical gaps, complements other forms of assistance and promotes resource availability for technical cooperation in the above fields. Requests for technical assistance under the programme may be presented by governments of member countries that qualify for development assistance under the UN system and by intergovernmental organizations of which such countries are members, and are recognized as such by the UN system and FAO. The EMPRES programme of FAO’s Animal Health Service has been active in assisting countries to meet animal disease emergencies such as outbreaks of CBPP and other transboundary animal diseases through the instrumentality of TCPs.
With reference to request by member countries for assistance in the control of CBPP, the following CBPP specific projects have been undertaken from 1990-2003:

i) TCP/RAF/6611, Regional Project (East Africa) Prevention of transboundary spread of CBPP from Southern Tanzania to neighbouring countries. Duration 24 months 1996–1998. FAO Contribution US$ 381,743;

ii) TCP/RAF/0172, Regional Project (West Africa) Coordinated programme to strengthen capacity for epidemi-surveillance of CBPP. Duration 24 months 2001–2003. FAO Contribution US$ 387,000;

iii) TCP/RAF/2809, Regional Project (SADC) Control of FMD and other transboundary animal diseases in Southern Africa. Duration 18 months. FAO Contribution US$ 351,000;


v) TCP/BOT/6712E, (Phase II). Duration 12 Months. FAO Contribution US$ 79,000;

vi) TCP/BDI/8821, Campagne de prophylaxie contre la péripneumonie contagieuse bovine et surveillance épidémiologique de la peste bovine. Duration 24 months; 1998–2000. FAO contribution, US$310,000;


Although the cumulative financial outlay for all these regional and country specific CBPP control programmes appear miniscule (US$ 3,322,633) in relation to the magnitude of the problem, financial provisions made in these projects and activities envisaged for project implementation, fulfilled critical needs and gaps in the overall strategy for the control of CBPP. The principal elements of prime consideration in the control of CBPP through the provisions of TCPs are the prime pillars of EMPRES that is; early warning, early reaction, contingency planning, enabling research and coordination. These elements are incorporated in the design of projects to ensure effective resolution of outbreaks.

**Surveillance**

Provision of laboratory equipment, diagnostic reagents, laboratory media and other consumables help to augment technical capacity to diagnose the disease and provide tentative
confirmatory evidence of CBPP outbreaks before final confirmation by a FAO/OIE designated reference laboratory. Such activity serves as a basis for early warning/early reaction and the drawing up of contingency plans for effective CBPP control. The supply of GIS equipment and the use of the FAO-developed software system and database, TADinfo, to assist in georeferencing of outbreaks and provide a basis for spatial and temporal analysis of outbreak trends for the adoption of counter epizootic measures. Disease recognition through the provision of manuals, publications, CD-ROMs, and videos, are integral parts of awareness creation and critical components of disease surveillance systems and disease management.

Capacity building

Most countries have a complement of competent trained specialists in the basic fields of CBPP control, laboratory diagnosis, data management, extension and in some cases, vaccine production. This provides a sound platform on which to build. In addition to assistance for establishing emergency preparedness in the control of CBPP, there is primarily, a need for technical assistance to transfer laboratory and surveillance technology – much of which has been developed by FAO and the Joint Division FAO/IAEA in Vienna, to member countries affected by the disease. Interaction and technical support from consultants, in country training workshops, study tours, development of country specific or regional strategies for the control of CBPP by FAO staff, consultants (international and partnership programmes) have been instrumental in capacity building for effective control of CBPP. Livestock dominates the livelihood activities and strategies of pastoralists. Therefore within the pastoral communities, capacity building in animal disease control is recognized as a key component in the development of overall strategy to control animal diseases such as CBPP. Such recognition is designed into TCPs to ensure long-term sustainability of control strategies.

Summary of status of FAO projects related to CBPP control

Two regional projects for East and West Africa have been closed. Key elements of these projects in CBPP control were regional cooperation and coordination of control strategies for the disease, regional referral laboratories strengthened and stakeholder awareness in disease recognition conducted. Although CBPP is prevalent in the East African region, Malawi has been able to maintain its CBPP-free status due to improved surveillance for the disease especially along its northern border with Tanzania through the provisions of TCP/RAF/6611. The regional project for CBPP in West Africa (TCP/RAF/0172) strengthened laboratories through the supply of inputs. CBPP disease reporting from the region has improved and there is better collaboration in disease information sharing and stakeholder recognition of the disease. The sustainability of these completed regional projects will depend among other things, on continued cooperation and transparency in animal disease information sharing. The regional project for SADC countries is still on going. One of the major outputs of the project has been a workshop with Chief Veterinary Officers of SADC countries in Pretoria, South Africa at which regional strategies to control CBPP in affected SADC member countries and strategies to prevent the entry of disease into free areas and thereby jeopardize the livestock and allied industries were drawn up. This project proposal has now been submitted for possible donor funding. The TCP project in Botswana approved in 1995 was very instrumental in launching a coordinated national surveillance system for CBPP in Botswana which served as the technical basis for a decision to slaughter 320,000 cattle to rid the country of the disease. Through the establishment of laboratory diagnostic capability, staff training and government commitment to the support of the veterinary sector, Botswana has sustained the key elements of this project.
and has obtained CBPP disease free status from the OIE. The country still carries out bi-annual serological and clinical surveillance during their foot-and-mouth disease vaccination campaigns to ensure continued freedom from CBPP. The assistance to **Angola** was primarily on improvements in CBPP surveillance capabilities. Since the project ended in 2001, there has been limited follow up activities. With the end of the civil war, it is expected that CBPP surveillance activities will be stepped up to serve as a basis for targeted control of the disease and minimise the risk of transmission of CBPP to neighbouring Zambia. **Burundi** benefited from the improvements in disease surveillance and provision of vaccines for the control of CBPP. Since the project ended in 2000, there has been little follow up action. **Mauritania** benefited from improvements in laboratory capabilities in the diagnosis of the disease. The country also participated in the regional project on strengthening the epidemiological surveillance of CBPP in West Africa. **Zambia** has benefited from two TCPs back to back on the control of CBPP in the western province. The most recent TCP is in conjunction with additional support from the UNHCR in constructing holding pens for refugee cattle and vaccinating them against anthrax, haemorrhagic septicaemia and CBPP. In addition, the FAO TCP facilitated the improvement in diagnostic capabilities for CBPP. Unfortunately, due to several logistic and technical factors, the disease could not be contained in the Western Province to the extent that it in 2002, the disease was detected in North-western Province. Serological surveillance capabilities established by the project facilitated the testing of cattle in North-western province by the complement fixation test (CFT) and the competitive enzyme linked immunosorbent assay (cELISA) which showed that the disease was more widespread than thought. The disease was detected again in February 2003 in Kashima - Mufulwwe district close to the copper belt province. CBPP appears widespread in Zambia and threatens her immediate neighbours of Namibia, Zimbabwe and Botswana. The current outbreak of CBPP in East Caprivi Province of **Namibia** is thought to have originated from south western Zambia. Government commitment of resources and streamlining of the veterinary services in Zambia, appear crucial to the containment of the disease and reduction of risk of transmission of the disease to neighbouring countries that are free of the disease.

**Sustainability issues**

Analysis of issues discussed and entry points for technical assistance by FAO clearly show that there is a wide range in the sustainable components of various programmes and project activities. What are clearly evident as missing are long term strategic plans and objectives that seek to address the control of CBPP at the end of FAO technical assistance. Technical capacity and sustainability in general, are affected by:

- Staff retrenchment as a consequence of adoption and implementation of structural adjustment policies. The loss of very capable and experienced workforce at this stage is an important component of the loss of disease control initiatives in particular localities where epidemic diseases such as CBPP are predominant. Loss of local animal disease prevalence history in rural areas where record keeping is not a specific feature of activities is a critical factor in sustainability;

- Poor resource capacity to allocate financial, logistic and human resources to the development and maintenance of animal disease control infrastructure, is a key factor in the deterioration of veterinary services and with it, outbreaks of epidemic diseases such as CBPP. The contribution of livestock to the sustenance of rural livelihoods to a very large extent has to be fully appreciated by governments so as to commit the necessary resources for its long term sustenance;
Cost recovery has affected the level of patronage of CBPP vaccination campaigns;

Experienced field and laboratory staff that are often the frontline staff for CBPP and other livestock epidemic disease control suffer the ravaging effects of the HIV/AIDS pandemic. The effects of the HIV/AIDS pandemic for the livestock sector especially in animal health and the inter-linkages underlying these effects remain poorly understood. However results of a Namibian study (2) provide additional information on the impact of HIV/AIDS on the livestock sector.

Summary

Technical assistance from FAO apart from the attributes previously described is meant to be catalytic in eliciting synergy with member countries and the donor community so that the needs of the present are sustained for the future in long term strategic plans for animal disease control. Therefore, one of the major outputs expected from this consultation is to evolve mechanisms that couple technical assistance to long-term strategic objectives and goals geared towards the control of CBPP in Africa.

References


Summaries of Presentations and Discussions

CBPP Control Strategies

Summary

According to the assessment made by the Epidemiological Unit of PACE, CBPP is endemic in many parts of Africa. However, the lack of data made this assessment and accurate zoning of disease distribution difficult. There was a pressing need for prevalence data to confirm zoning. The reasons for the persistence of CBPP were attributed to animal movement within and between countries. Other reasons were, the absence of adequate diagnostic tests, the lack of use of diagnostic tests because of diminished financial support and a downturn in the use and quality of CBPP vaccine. Therefore, efforts to build diagnostic capacity were required. A regional approach that takes into account differences in epidemiological situations, the provision of training, and veterinary surveillance for the disease at borders was proposed. A draft project proposal was summarised where surveillance, quarantine and serological screening were advocated for free zones. These together with ring vaccination with branding of vaccinated cattle were promoted for newly affected areas. The use of harmonised mass vaccination and antibiotic treatment for 5 years were proposed for enzootic zones. All efforts should be made to minimize the likelihood of the reintroduction of CBPP into free areas by the establishment of buffer and surveillance zones.

The recent resurgence of CBPP in Africa was attributed to the lack of funding. Animal losses in Africa due to this disease were estimated to be about US$ 2 billion. The threats to CBPP-free countries from affected areas within the SADC members were emphasised. The effects of CBPP infections were felt at several levels i.e. at household, national and regional levels but losses were likely to affect food sources and draft power leading to significant hardships at the household level. In Botswana, this sector suffered 80% of the losses and therefore efforts to keep this area free of incursions of CBPP were strongly reiterated. The endemic epidemiological clusters of CBPP in Angola and Tanzania were noted. Illegal cattle movement, ineffective vaccination campaigns, and the lack of contingency plans were identified as the immediate challenges to effective CBPP control. Plans for ‘the way forward’ included the development of a phased strategy where emergency and recovery phases that were designed for the containment of disease were explained. A 16-year guideline/plan for the progression from control of the disease from primary endemic foci infection to freedom from disease was discussed.

A participatory modelling study that was based in Northern Tanzania, and Sudan, was conducted by PACE/CAPE to gather information about the dynamics of cattle movement within the local communities. The complex social interactions that involved animal movement and the transmission of CBPP in a herd were modelled by using field data, and information available in the literature, respectively. Simulations from these models predicted that CBPP could persist indefinitely in small, interlinked herds of 50 head, or in single herds of 300 head. These data supported the requirement for quarantine to interrupt the transmission cycle. However, this was deemed to be unrealistic in pastoral communities. Simulation of mass vaccination showed control but not elimination of disease and thus would not achieve eradication of CBPP. Elective vaccination was proposed because the model predicted a short-term benefit to the owner, but liberalisation in the availability of the vaccine would be required in this case. Effective treatment, according to the model, was of more benefit than vaccination because it reduced persistence of
disease in herds. Near eradication was predicted by combined programmes of effective vaccination and treatment.

A longitudinal serological study conducted in the Ethiopian highlands was used in mathematical model work on the spread of CBPP disease. Of the 71 herds that were followed for about one and a half years, 35 were infected with CBPP. Fifteen of them were classified as newly infected and used in a serological and clinical incidence study. Cumulative risks of seroconversion over 8 and 16 months were calculated to be 26% and 34%. In these herds, the average serological, clinical, and mortality incidences were 34%, 39% and 13%. These were lower than those reported in the literature (70%, 30-70%, 10-80%, respectively), but there were no obvious explanation for this finding. They could have been MmmSC strain or cattle breed related. Although 50% of the herds were treated with single injections of oxytetracycline, no effect from this was seen or could be shown statistically. The possibilities of underdosage and reduced antibiotic quality were proposed for these observations. Further studies were required to resolve these issues. Two disease transmission models were proposed, one that included the possibilities of interactions from animals with sequestra and another, simpler one that excluded these. Simulations from these provided estimations of transmissibility when periods of susceptibility or latency were varied, but many more simulations were necessary before firm conclusions could be made. More data were necessary to confirm mathematical situations e.g. the transmission from chronic carriers, and effects of antibiotic treatment.

Discussion

In drawing up strategic control policies based on epidemiological data, or contingency plans, mathematical models for transmission and disease, situation based on experimental or field data, the common fact and a stumbling block was the lack of reliable data. Considering the method of livestock production in Africa i.e. mainly transhumance, it was difficult to set up surveillance to gather epidemiological data. This reality and the fact that veterinary structures have been disrupted due to budgetary constraints made the setting and implementation of control strategies difficult.

Conventional and new approaches for CBPP control were discussed. It was obvious that movement control at the level that was practiced in the 60s was not possible today, and the control of CBPP may be more costly than the losses from the disease itself. Longitudinal studies and computational modelling, could be carried out in other countries and would account for the different livestock situations in different countries. These required accurate data to be useful. The observed seasonality in the incidence of CBPP in some herds in Kenya herds was surprising; owners described this seasonality which may have been due to mixing or weather patterns, but there was no supportive data.

The effectiveness of antibiotic therapy was questioned because no clear basis for its use was demonstrated. There were conflicting cases made for the consequences for the use of any antibiotics, but the potential impact was presented and the urgent need for more field research was highlighted. Antibiotics that are bacteriostatic cannot eradicate the disease but they may have a significant effect in the reduction of infection or the transmission of infection. Thus mathematical models including these factors could be used to test the potential benefits of therapy. Absolute quarantine as a way of transmission control was possible but not practical and models would be able to predict the epidemiological outcomes as the infection rates varied.
Heated debate ensued on proposals for the use of elective vaccination. As CBPP is a notifiable disease and its prophylactic measures are obligatory, caution was expressed in the use of elective vaccination as a CBPP disease control option. However, at the moment prophylaxis was not regularly practiced so if the owner’s choice was to choose a programme that benefited him then control option could be considered.

TOOLS FOR CBPP CONTROL – VACCINES

Summary

Toxins have never been described for Mmm SC nor have virulence factors, but potentially galactan, variable surface proteins, lipoproteins, transporter proteins and adhesions may modify virulence. These classes of proteins were major antigens and many are located on the surface of the organism and thus suitable targets for molecular manipulation towards the production of vaccine. The lipoprotein LppQ that was already used in a diagnostic assay exacerbated the disease when inoculated into cattle despite the fact that it is present in current vaccines. ABC transporters and associated systems for the export and import of molecules could influence virulence such as the glycerol uptake and metabolic system. In Mmm SC, especially in African/Australian strains, this system is capable of producing relatively large amounts of peroxidase, which, given the close cell to host cell association of mycoplasmas, results in the induction of apoptosis of the host cell. Several generic targets for vaccines and methods for their production were considered and discussed.

Two new preparations of dead vaccines were tested for their protective ability. One was saponised, whole-cell MmmSC, and the other was purified LppQ ISCOM.. They were inoculated separately into cattle that were subsequently challenged with a local field strain of MmmSC. Both preparations did not elicit specific antibody responses. After challenge, it was observed that there was disease severity as judged by the extent of lung lesions compared to experimentally infected controls that had not been vaccinated. The animals appeared to have been sensitised.

Improved vaccines could probably make the major contribution to CBPP control. Towards this goal, the immune responses of two vaccine preparations, T1 44 and a saponised virulent field strain, were studied for their ability to elicit specific antibody and lymphoproliferative responses. Preliminary results showed that antibodies were elicited by both preparations and a single inoculation with the saponised strain produced responses similar to a booster with T1 44. Various antigens produced varying degrees of proliferative responses from lymphocytes. Cell populations remained similar throughout the course of vaccination.

Does T1 44 revert to virulence? Every now and then but with unpredictable frequency, some T1 44 vaccinated cattle develop Wilhelm’s reactions at the site of inoculation. These reactions are not caused by subsequent vaccinations with T1 44 vaccines. The reactions range in severity and can be cured with antibiotic treatment. A study to assess if this phenomenon was due to differences in these MmmSC organisms was undertaken. The vaccine T1 44, a local field strain of MmmSC and an MmmSC organism named T1 B, isolated from a vaccination reaction site, were re-inoculated into cattle that were monitored clinically. T1 44 did not cause any local reactions, but field strains and T1 B caused large local reactions and fever. T1 B behaved like the local field strain. MmmSC was also re-isolated from these lesions. Protein profiles of these organisms were compared using SDS-PAGE. Changes in the high molecular weight range between T1 44 and T1 B were observed. The significance of these differences was not known at the moment.
The apparent failure of the T1 44 vaccine in Botswana could have been due to incorrect vaccine seed strain, insufficient vaccine titre, or underdosage. Studies showed that the strain was correct, and further experiments were undertaken to study the dose and its protective effect. There were no significant differences between doses from $10^7$ to $10^9$ organisms; mortality rate in controls was about 30% compared to about 6% in vaccinated animals. The severity of lesions was scored. A reduction in that score in the vaccinated animals showed clear protection. Variations in individual animals were observed. T1 SR was also tested and although statistical differences could not be shown, T1 44 appeared to be more protective according to the lesion scores. It was suggested that high titres were necessary to prolong the shelf life of vaccine.

With the current CBPP situation in Africa, the two options for CBPP control actions are either “accept it” i.e. live with the disease or “control/eradicate it”. To live with CBPP is politically unacceptable because the use of antibiotics would increase while production and income would decrease. To eradicate CBPP would involve losses through stamping out and movement restrictions. The only realistic option for Africa is vaccination and the two options are to develop new vaccines or to use existing ones. The development of new vaccines would be costly and require many years of research efforts. Efficacy, production and political issues would have to be resolved before meaningful progress could be made. The biggest issue however, is that of funding. Who would fund vaccine development/research? Therefore, the way forward is to improve existing vaccines by increasing their thermal stability, viability and immunogenicity.

Discussion

Current research must not to be abandoned because it could also lead to better vaccines and diagnostic tools. Applied research to improve the stability of T1 44 vaccine were urgently needed. There are good opportunities to improve vaccine products and these may be made by simple modifications in the formulation including the reconstitution buffer, attenuation of strains by genetic modification and minimization of adverse reactions.

FAO has commissioned work using xerovac vaccine technology, in which trehalose is used to improve vaccine stability at higher temperatures, that may not require the need for cold chain storage. This work should be published and the work taken further. The simple but crucial observation of adverse effects of reconstitution with buffer containing MgSO4 sparked much discussion. Perhaps it would be relatively simple to change the buffer, but caution and further work to check the viability of organisms was recommended before these methods were standardized. This effect of MgSO4 buffer was questioned. It was suggested that this diluent was added to measles and RP vaccine and afforded some thermal protection. However, the effect of MgSO4 on CBPP vaccine would also have to be investigated. Moreover, this solution was widely used as reconstitution buffer for other vaccines without adverse effects. It was also recommended because in the past almost anything was used and field ‘short cuts’ were
common. It was also argued that MgSO\textsubscript{4} did not inactivate the vaccine but drop in pH caused a rapid decrease in the viability of the organisms. Perhaps viability was not a problem for other vaccines used. Therefore, if the vaccine formulation was better buffered e.g. with HEPES, then the pH would be stable enough not to cause the loss in viability. A different reconstitution buffer such as phosphate buffered saline would also overcome this problem. A pH indicator in the buffer could also help to verify the correct pH after reconstitution. Such information suggesting practical changes could be disseminated very quickly and manufacturers could make the necessary adjustments to production equally fast, but pilot studies were required to show the effects of HEPES and MgSO\textsubscript{4} in field conditions of Africa. In fact many of these ideas would require experimental validations and changes in the standard methods of production of existing vaccine would require retesting for efficacy etc. No funds are yet available for this activity from international donors.

Methods to improve vaccines by genetic modifications were also available, but the genes that lead to attenuation are not always virulence genes and may not be those essential for eliciting Wilhems reaction.

The apparent reversion of T\textsubscript{i} 44 to T\textsubscript{i} B that consistently caused tissue reactions at the site of injection prompted much debate. How stable was this reversion? The reaction happened after the 2\textsuperscript{nd} passage; T\textsubscript{i} B was still virulent after 2 \textit{in vitro} passages. The pathogenicity of T\textsubscript{i} B was not known. One criticism was that T\textsubscript{i} B was not purified and so the inoculum may have contained wild type strains of MmmSC and therefore Koch’s postulates were not fulfilled for this isolate. In fact this was a safety study and not a virulence study and only one batch of vaccine was used. Why was reversion occurring in animals but not \textit{in vitro} e.g. during vaccine production? OIE guidelines stipulate that vaccine strains have to undergo two passages from the grandparent stock, thus in culture there is no pressure for much change. In animals, there is selection of more virulent strains at the expense of less virulent strains.

In the field, tissue reactions after vaccination with T\textsubscript{i} 44 were seen in Kenya but none in Namibia, Cameroon and Chad. The unpredictable nature of the incidence of reactions could not be explained.

Assuming that vaccines could be improved, according to some models CBPP cannot be eradicated with vaccination alone, so even when a country wanted to eradicate CBPP, it could not do so.

**TOOLS FOR CBPP CONTROL – USE OF ANTIBIOTICS AND DIAGNOSTIC TESTS**

**Summary**

An optimistic view of the research trends driven by technological advances in molecular biology e.g. higher throughput capacity of sequencing was given. In fact the genome of the type strain of MmmSC has been sequenced, but its origin and virulence are doubtful. No obvious virulence factors have been identified. The comparison of attenuated and virulent strains in terms of the production of protein i.e. proteomics, may establish virulence factors. The expected benefits from these types of studies on pathogen/host relationships and immuno-pathogenesis are, better vaccines and diagnostic tests. Other important areas of research were the description of transmission factors, usefulness of antibiotics, types and appropriateness of
surveillance systems and control strategies, and computational models (because there are no animal models for simulating CBPP disease).

Antibiotics are officially forbidden for use in CBPP but nevertheless still used often in the field. The in vitro activity of some of these is known but little information exists on their in vivo activities on Mmm SC. The activity of tetracycline that is used most often was studied in the field. Preliminary results showed that it reduced inflammation at the inoculation site but did not prevent infection. It reduced the severity of lung lesions but did not prevent them, and the pathogen was able to persist in the host. In the field where the quality and dosage of the antibiotic may not be optimal, these effects may not be sufficient for effective treatment of CBPP disease. Therefore, tetracycline has no place in eradication campaigns but may be of some benefit together with vaccination campaigns e.g. in the control of post-vaccination reactions.

The results of an FAO/IAEA Co-ordinated Research Project (CRP) on the “Monitoring of contagious bovine pleuropneumonia (CBPP) in Africa using enzyme immunoassays” showed that the complement fixation test (CFT) and a competitive ELISA for the detection of antibodies to Mmm SC were adequate tools for the monitoring and surveillance of CBPP. Although none of the validated diagnostic test was sufficient on its own, estimates of the sensitivity and specificity will allow the development of testing strategies which are suitable for the surveillance of CBPP and in the text detailed recommendations for a surveillance and testing strategy for different epidemiological situations are discussed. The inclusion of internal quality controls in the cELISA showed a high level of repeatability and reproducibility of the test which will ensure that test results produced by the laboratories are reliable and comparable. During the CRP, the CFT and the competitive ELISA were introduced into 11 African countries.

Portugal has successfully eradicated CBPP since its reintroduction in 1985. Strategies that led to a declaration of freedom from CBPP were as follows: accurate zonation, movement control, yearly serological surveillance from 1985 to 1994 that was increased to biannual testing between 1995 to 1997, abattoir surveillance and prompt follow up, culling of all serologically positive animals and eventual stamping out. During the first period, these measures firstly mapped the extent of the disease that was mainly in the north of the country and reduced the incidence of CBPP within these regions such that re-zonation encompassing smaller areas was feasible. The second period saw the further shrinking of these regions and a dramatic decrease in incidence. In this situation the inadequacies of CFT were unacceptable and a new confirmatory test, the immunoblotting test (IBT) was introduced to resolve the false positive results seen with the CFT. Since 1998 the CFT and IBT have been performed serially on all sera for CBPP surveillance ensuring that an accurate diagnosis and assurance of freedom from CBPP was the prime target.

The impact of CBPP was assessed using participatory epidemiology techniques. Not only could these methods assess the relative incidences of diseases within the community, but they could also provide useful information on their importance to the owners in terms of lost production and real wealth in the absence of validated numerical data. These techniques could provide comparative impact assessments, had a proportional approach, random sampling was possible, could be standardized for valid comparisons with other populations and results could always be checked by conventional methods. Unlike conventional epidemiology that is commodity based and thus is an outsiders view, participatory epidemiology provided the insiders view that included private and sensitive information not accessible otherwise. Data gathered in Ethiopia were presented on the impact of several diseases including CBPP on cattle production.
Often, information on CBPP for research or teaching purposes is not readily available especially in many African countries. AVIS (Advanced Veterinary Information Systems) in partnership with TELOS-Aleff Ltd, the Institute of Animal Health (IAH), UK, FAO/OIE Collaborating Centre for CBPP, and the FAO have developed a web-based information system that strives to rectify this. The modular nature of the system and its user friendly interface and accurate information, offered by experts in the field were demonstrated.

CBPP is the second most important disease targeted for intervention within the PACE programme, but its inclusion in this list was questioned because of the lack of supportive data. The primary objective of PACE was to persuade regional integrated policies for surveillance to accumulate this data and control activities especially in endemic regions. To this end, several meetings, consultancies and draft policy documentation were carried out from 2001 to 2003. It was evident, that there were insufficient resources within PACE countries for the eradication of CBPP, estimated to cost about €300-450 million and mass vaccination needed extensive political support. Other factors that were deterrents to CBPP control were poor vaccine quality, the lack of an in vitro test for the differentiation of vaccinated from none vaccinated animals and the deterioration of veterinary services in some countries. The impact of CBPP was difficult to estimate, as the observed and reported mortality and morbidity data alone were not significant. The use of participatory epidemiology afforded some understanding of disease dynamics. Alternative control strategies included antibiotic therapies (although the choice of therapeutic agent was not clear), elective vaccination where the private sector (owner) decided the course of action. These measures would require the liberalization of the availability of CBPP vaccines, acceptance of antibiotic therapy, training of farmers and the acceptance of this concept by veterinary services.

Discussion

Discussions on the choice and use of antibiotics questioned the use of tetracycline. Tetracycline was chosen for these studies because it was the most common antibiotic used in the field by farmers. Although it did not prevent infection and it is basically bacteriostatic, it may have a place in therapy because it may provide time for the animal to develop immunity.

The activity of other antibiotics such as tylosin was questioned. It was used in southern Sudan and could be effective. Some in vitro work was done but it was impossible to extend this to the field. Broad in vitro studies needed to be done followed by focused field work. Research was also required on the likelihood of antibiotic resistance. Some work has been done in Muguga and there was some evidence of resistance to tetracycline in Mmm SC. Research was necessary to look for the type of resistance mechanism involved and if the resistance is transferable. Antibiotics that do not sterilize but may stop symptoms could produce animals that posed further threats by transmitting the disease thus confounding the issue. The influence of antibiotics on diagnosis was not known. However, the demand for treatment was high and farmers already treat animals, so the need for a good drug regimen was important. EU regulations for exporters of meat from Africa have to critically consider the issue of antibiotic residues.
COUNTRY SPECIFIC CONTROL STRATEGIES

Summary

In the late 60s there were great expectations for the control of CBPP in West Africa. In the late 80s during the PARC project with mass vaccination against rinderpest and CBPP, relatively few outbreaks of CBPP were encountered. The mid 90s saw a resurgence of CBPP prompting emergency activation of national and international programmes. Cattle production systems in these areas follow extensive pastoral nomadism and the spread of CBPP was assisted by uncontrolled transhumance across borders. A review of the current situation indicated that CBPP was widespread in West Africa and parts of Central Africa but the true picture of disease distribution was difficult to delineate because of imprecision in surveillance and reporting data. Guinea and Senegal have excellent surveillance systems. In some regions of Africa, laboratory capabilities were not equal or similar between countries and not balanced between peripheral and central laboratories. A review of the current control strategies showed inconsistencies in surveillance, notification and vaccination programmes between countries of the same region. Guinea and Nigeria currently have strong control measures for CBPP although the rate of vaccination decreased from 1999-2001. A phased control strategy was proposed, where building and refining epidemiological data collection, infrastructural development, community involvement in disease search and data collection; reduction of national risk by limitation of re-entry and uncontrolled movement of infected cattle; institutionalised surveillance, private and public sector involvement in CBPP disease control efforts; and regionally co-ordinated efforts, were defined. Strong political will and high commitment and tight co-ordination between sub-regions were identified as most important and critical factors in the success of this strategy for the control and eradication of CBPP in West and Central Africa.

Of the 16 million cattle in Nigeria, 90% were nomadically reared and 10% were intensively farmed. Transhumance is very important and CBPP in this population was most important. It caused direct and indirect losses and secondary social consequences. After virtual eradication in 1965, the disease has made a steady come-back due to civil strife or changes in socio-economic situations. There is considerable north to south movement of cattle in Nigeria and between 1995 to 2001, outbreaks increased from 8 to 31. A new policy and strategy for control were introduced comprising containment and control phases that included proper zoning, test and slaughter and vaccination with the aim of reducing CBPP incidence to 10%. Early detection, maintenance of a reporting chain, 5-year vaccination programme with minimum of 70% coverage, and liaison with neighbouring countries were the key elements of this plan.

In Angola, south of the 14th parallel is the most important endemic focus of CBPP in Southern Africa. Transhumance is a way of life and trade in livestock products, exchange of cattle for draft power, civil and military unrest all contributed to the increase and persistence of CBPP. Earlier, field vaccine, which was essentially pleural exudates, was used. This caused the spread of CBPP, but during 1970 to 1994 vaccines that were essentially T144 were used albeit inconsistently due to interruptions by civil strife. Recently, 2002/2003, cattle movements have been mapped out and as part of a 5 year plan, a buffer zone between the 13th and 14 parallel has been established although there cannot be physical barriers (as it is in Namibia). Other activities such as rebuilding of laboratories destroyed during the civil war, establishment of general animal health networks, veterinary services and laboratory networks are being undertaken with the help of international donor funds. It may be possible to control CBPP from Angola given political will, a well-defined animal health policy, scientific efforts to improve the vaccine and International support.
In Namibia CBPP is endemic in the northern communal region. Historically, vaccination with T1 44, has been practiced in this region but between 1995 and 1999 there was a 10-fold increase in mortality due to CBPP. This may have been due to increased transhumance, or ineffective vaccination with T1: SR, however, CBPP was kept in check by movement control. In 2003 CBPP returned to the Caprivi strip. There were 17 cases confined to the Kavango region, and an outbreak near the border with Botswana where 78 of 104 cattle were positive according to the CFT test and 80% had typical lesions. It is noteworthy that CFT was most useful test in this outbreak. Comprehensive stamping out was not possible in this case due to financial considerations but a vaccination programme was instituted.

CBPP spread from the East near Mali, to Haut Guinea and Guinea Forestiere. Mass vaccination with T1 44 was started in 1987 followed by surveys. From 1995 onwards, zoning, legislation and regulation, active participation of stakeholders, animal identification and training of herdsmen and veterinary staff, abattoir surveillance and compensation improved this strategy. Dissemination of information was essential and done through national TV and radio, through workshops and distribution of handbooks. Financial support came from government and international bodies. The programme was well supported by livestock owners and private veterinarians carried out most of the vaccination in 2002. Peak vaccination coverage was in 1997 and has decreased a little because of civil unrest. These actions resulted in the decrease in outbreaks and slaughter.

In 1999 civil strife in Angola caused an influx of refugees and their cattle into the West of Zambia. Despite some stamping out efforts CBPP spread northwards prompting zonation and vaccination. These efforts were continued and supported by setting up testing facilities and training. At present abattoir surveillance, serological surveillance and sensitisation are being carried out. Vaccination in a large area to the West has been proposed.

Discussion

The significance of CBPP was questioned by some participants earlier during this meeting. Yet during this session it was obvious that 27 countries reported the disease because there was a problem. The lack of data in the public domain was explained by the unwillingness to publish due to political concerns or the sluggish attitude towards publication. In the Caprivi of Namibia 2000 animals may be infected and it is a big problem not only for that country but also for the surrounding disease-free countries. In Zambia the situation was worsening because of Angola, but the situation is changing and conducive to regional disease. In the past individual country strategies have not made collective difference in this region.

There are many gaps in the scientific knowledge on CBPP. Virulence factors and the genes responsible have not been identified; these genes and those that lead to a protective response must also be identified. The genes that may confer virulence or protection are not the same as those responsible for attenuation of an organism. Research towards better vaccines is important. It is also important that diagnostic research continues to distinguish between vaccinated and non-vaccinated and infected animals. The serological tests, CFT and the successfully validated cELISA may perform differently in different countries, but are adequate for surveillance purposes. Sera collected for the Rinderpest campaign may be used to gather this data provided that relevant CBPP data is known. The PACE Epidemiology Unit should be able to provide clarification of this. The requirements for rapid, user-friendly diagnostic tools and better vaccines are still urgent and require continuing research.
The earlier proposal of elective vaccination prompted intense and lengthy debate. It was felt that elective vaccination may break down zonation and the precision of activities within them and interfere with surveillance and diagnostic activities. These criticisms were moderated by the suggestion that free vaccination was for endemic areas only and that the mixture of mass vaccination with elective vaccination could improve coverage.

Several strategies for the control and possible eradication of CBPP were presented that seemed contradictory. They reflected differences in livestock management or capacity of veterinary services the particular country or region. If policy makers in a region or locality acted synergistically, then control strategies would be poised for maximum effect. Synergism between the private and public sectors in complementary partnership would be desirable because it would be more efficient. Perhaps solutions to the problems in primary endemic areas could begin to appear. The presence of representatives from Namibia, Angola, Zambia at this meeting would provide opportunity for collaboration towards this. Therefore, despite the lack of data, but with the firm assurance from the meeting that CBPP is a significant problem, it was agreed that CBPP control should be driven ahead and proposals for control should not be postponed.
Closing Remarks

Dr. Y. Cheneau, Chief, Animal Health Service, AGAH

Mr. Chairman, Ladies and Gentlemen,

I apologise on behalf of Dr. Samuel Jutzi, Director of AGA, who could not be present at the close of this meeting due to prior pressing commitments.

Mr. Chairman, this has indeed been a highly satisfactory meeting over the last three days. New and relevant ideas were presented that have stimulated exceptional discussions and debate. We must not underestimate the impact of CBPP in Africa and realise that it is a problem despite the lack of supportive data in some instances. Data to substantiate this claim is scarce or lacking, or it may be inapplicable, but it is a problem of sufficient magnitude for the SADC countries to announce it in the popular press during the launch of an appeal for donor support in the control of CBPP and other transboundary animal diseases. We have to deal with this reality. The meeting has taken into consideration vaccination and antibiotic treatment, and progress in the basic research has been presented. I thank all the authors and presenters for their continued efforts. In this respect I am pleased to announce that this forum has been institutionalized and I hope that these meetings will continue and receive continuing financial support from FAO.

I wish to comment on two crucial issues in the control of CBPP. The first is the state of veterinary services in Africa, I am inclined to mention that the first and most important objective of PARC was to improve these services. We should do likewise for the control of CBPP because Veterinary services today are not up to strength. The second is the state of PANVAC. We know that it has not existed functionally for about two years. The operational presence of this vaccine quality control laboratory is of utmost importance to the effective production of CBPP and other vaccines used for animal disease control in Africa. CBPP vaccines must always be properly quality assured if they are to be effective in the field. All efforts must be directed to re-opening this laboratory and it must be maintained by AU/IBAR.

On behalf of FAO I thank you for the quality of your work at this meeting and promise that we will not be inactive in trying to promote CBPP control in Africa. In our deliberations and discussions, we have reached consensus and I am particularly pleased to see that we have not advocated the open and free use of vaccine in the field.

Ladies and Gentlemen, I declare the meeting closed, and although we are responsible for keeping you here for long hours, in the time remaining please enjoy Rome. My successor will welcome you in two years time to the next CBPP Consultative Meeting.

Thank you.
FAO-OIE-AU/IBAR-IAEA
Consultative Group Meeting on CBPP in Africa
Towards sustainable CBPP control programmes for Africa
(Rome, 12 – 14 November 2003)

Recommendations

Preamble

The continuing spread of CBPP disease, has confirmed the decreased capability of the control of the disease throughout Africa. The reasons for this include gaps in the basic understanding of the disease and the implementation of effective surveillance and control programmes. This prompted FAO together with the OIE, AU/IBAR and IAEA to convene a joint meeting of specialists to review the current situation with CBPP disease and to suggest actions for improvement of this situation. The meeting was held at FAO, Rome from 12 – 14 November 2003. Specialist working groups reflected on the current knowledge brought together here and deliberated on the needs for applied research and policy under the headings:

- CBPP control strategies;
- Tools for CBPP Control – Vaccines, and;
- Tools for CBPP Control – Use of Antibiotics and Diagnostic Tests.

The recommendations emanating from this meeting are as follows:

CBPP Control Strategies

Introduction

Whilst there is no doubt that CBPP is considered an important disease of cattle in Africa, there is scant data to accurately measure its extent and socio-economic impacts. The suppression of incidence of CBPP, especially in endemic zones, and the maintenance of disease free zones against disease incursions from neighbouring areas are the main aims of control efforts. To achieve these, given complex cross-border political and animal production systems, co-ordination of policy within countries and within the sub-region will be necessary. Concerted control strategies and actions be they vaccination, chemotherapy, or a combination may then be applied to full effects.

Considerations:

1. Cognizant of the fact that CBPP is widely regarded by veterinary policy makers to be a disease of strategic importance there is a need to verify the livelihoods impact of CBPP relative to other animal health issues.
2. Because CBPP is a strategic disease in many sub-regions for sub-Saharan Africa efforts directed toward defining more accurately the location and role of primary endemic areas in the persistence and spread of CBPP is vital.

3. Cost-beneficial application of CBPP vaccine is central to the progressive control of the disease. Targeted vaccine application in contrast to mass vaccination may be appropriate in some situations (as recommended in 2000).

4. Vaccination provides the basis for all feasible control strategies. It is therefore vital that only safe and effective vaccines are supplied to service providers. Furthermore, continued efforts to ensure the timely availability of thermostable vaccine needs to remain a priority.

5. Considering that modelling studies have indicated that strategic use of antibiotics may be beneficial their use needs to be considered.

Specific Recommendations

1. The strategic approach to CBPP should be based on progressive control leading ultimately to area-wide freedom from the infection. A long-term (10 to 15 year) programme encompassing the following should be applied:
   - Impact assessments of CBPP at regional, national and zonal levels need to be conducted to justify the anticipated expenditure required for progressive control of CBPP. Participatory approaches are among appropriate methods to achieve this end. These studies should be applied in all sub-regions (clusters of countries) of sub-Saharan Africa;
   - Cost-benefit analyses of the strategies in force in selected countries of the 3 sub-regions;
   - Depending on the epidemiological situation strategies need to be applied to free and epizootic regions as defined in the report of the CBPP Consultative Group meeting of 2000. For endemic regions targeted vaccination or other alternative strategies need to be investigated.

2. A mechanism to enable independent accreditation of CBPP vaccine quality for African countries needs to be established. Ideally, this should be based on the revival of PANVAC.

3. Research needs to be continued into:
   - Antibiotic treatment of clinical cases;
   - Improved vaccines and diagnostic tools;
   - Targeted application of vaccine as a strategy to improve progressive control of CBPP.

4. Pilot projects located in the field and directed towards improved integrated control of CBPP (including antibiotic treatment and liberalization of vaccine availability) need to be undertaken in carefully defined areas and the results made available to all interested parties.
5. CBPP control programmes could be used as a model on which to base improvement of veterinary services, especially in respect of surveillance, control and private/public sector collaboration.

6. Disease modelling is an appropriate tool for improved understanding of the epidemiology and impact of CBPP and its use should be encouraged.

7. Financial planning to ensure adequate financing of the progressive control of CBPP in sub-Saharan Africa.

Tools for CBPP Control – Vaccines

Introduction

The task of this working group was to consider progress on recommendations made at the two previous consultative group meetings on research of new and existing vaccines. In particular we looked at improvements in existing vaccines, input of PANVAC and the need for independent quality control; construction of vaccines that allow DIVA type differentiation of infected and vaccinated animals; and the set up of a database of vaccine producers, their capacity and the current need for vaccine doses in Africa.

Considerations and Specific Recommendations

The group recognized that most of the recommendations made at the last two meetings had been achieved. However the use of T1 44 and T1 SR vaccines needed to be reconsidered in the view of adverse reactions seen with the former in certain circumstances. Little progress had yet been made on the development of new vaccines. To date little was known of the molecular mechanisms of pathogenicity although some progress was made on virulence factors.

8. Concerning the improvement of existing vaccines and their use:
   - PANVAC is advised to investigate improvements in vaccine formulation including the use of diluents in relation to improved titres and thermal stability. This also includes testing of current vaccines for the stability of pH after reconstitution with currently used diluents;
   - Results of vaccine boosting experiments which are ongoing at KARI should be published within the year;
   - Results of experiments to investigate the use of trehalose in the freeze-drying medium to improve the thermostolerance of CBPP vaccines should be published.

9. Concerning the input of PANVAC:
   - Independent external quality control must be re-established in PANVAC;
   - All vaccines used at national level should be certified by PANVAC;
   - AU/IBAR should fully support the operational activities of PANVAC;
   - PANVAC should continue to strictly apply OIE guidelines on CBPP Vaccine manufacture.

10. Concerning the development of new vaccines:
• Encourage basic research to improve the understanding of pathogenicity and immune protection in CBPP. Data should be published promptly;
• Development and improvement of new vaccine strains must follow the basic rules of biological safety for recombinant vaccines;
• Future vaccines should include the capability for differentiation of vaccinated and infected animals.

11. Other:
• List of CBPP vaccine producers and their capabilities as established by PANVAC should be sent to the OIE and FAO.

**Tools for CBPP Control – Use of Antibiotics and Diagnostic Tests**

**Specific Recommendations: Diagnostic Tests**

12. To establish the prevalence of infection in endemic areas cross-sectional serological surveys should be undertaken.

13. To confirm the absence of disease from an area clinical surveillance (including participatory techniques), abattoir/slaughter slab surveillance and serological surveillance must be undertaken.

14. To confirm new outbreaks isolation and identification of the infectious agent must be performed. None of the serological tests on its own is sufficient as a single diagnostic test but it may be useful if serum samples from several animals are collected and tested in the CFT and the cELISA to obtain a diagnosis on herd basis.

15. Detection of antibodies and duration of detection after infection, antibiotic treatment, vaccination and multiple vaccinations are important parameters and must be clearly defined. Insufficient information on the influence of antibiotic treatment and multiple vaccinations is a constraint that must be addressed.

16. For the confirmation of outbreaks and the early detection of circulating antigen penside tests are very useful. The existing tests need validation and if adequate should be transformed into robust tests to minimize operator bias and errors. More specific and sensitive tests based on the early fraction of the capsular polysaccharides (CPS) needs further assessment before it can be validated at the field level.

17. Quality assurance of the CFT is difficult. Standardized reagents and internal quality controls (high/low titre sera with a defined titre, borderline negative sera) should be introduced to limit the variation. The joint Division of FAO/IAEA, Vienna, should coordinate this activity.

18. The immunoblotting test is highly specific and should be introduced as a confirmatory test at critical phases of CBPP control programmes.

19. The differentiation between individual animals that are infected or had been vaccinated recently is important and serological tests for this purpose should be developed.
20. The CFT is more useful for the early diagnosis of infection; however, an ELISA that is capable of detecting animals at an early stage of infection would be highly desirable.

21. The quality assurance of diagnostic results is critical, and the joint Division of FAO/IAEA, Vienna should undertake its coordination.

Specific Recommendations: Antibiotics

I. Pilot trials

Introduction:

IBAR/PACE has recently commissioned studies of CBPP epidemiology that accessed indigenous knowledge of pastoral communities to construct mathematical models. Sufficient understanding has accrued from these studies to suggest that a new paradigm for CBPP control using antibiotics should be investigated. The prospective benefits are such that pilot trials should be established without delay.

Considerations and Specific Recommendations

The target populations, at least initially, are the pastoral communities of eastern, central and western Africa. The trials proposed need to be based on the use of antibiotics to treat acute cases and elective vaccination. Two scenarios in pastoral communities should be studied; in order of priority these are:

- Management of endemic disease;
  - with regard to the use of antibiotics as a therapeutic intervention;
  - with regard to vaccination and the possible influence of antibiotics on the immune response;
- Management of acute disease from recent introduction;
- In devising protocols to be followed, the antibiotics used will need to be selected carefully to ensure that:
  - Recently developed, and potentially more effective, mycoplasmacidal, chemotherapeutic agents are included;
  - Care is taken to avoid repercussions of the future use of chemotherapeutic agents for human.

22. PACE with FAO should embark on collaborative pilot trials in 2004 by establishing a virtual working group to draw up protocols and initiate field studies to be conducted in close collaboration with the national authorities in key countries. The collaborating partners should communicate with the pharmaceutical industry to obtain their inputs in protocol development and possible co-financing of studies. Thus, there should be three phases of the trials:

(a) Preparatory phase: establishment of virtual working group – establish dialogue between partners and with the pharmaceutical industry; development of protocols, define logistics, source funding;
(b) Study phase – overseen by PACE national programmes;
(c) Analytical phase with final report produced after a workshop.
II. Studies on microbial sensitivity

Introduction

In order to facilitate the selection of candidate chemotherapeutic agents and to understand better the existing situation, there is a need to carry out MIC and MMC studies on current African strains of *Mycoplasma mycoides* subspecies *mycoides* SC.

Considerations and Specific Recommendation

The UK Veterinary Laboratories Agency has the relevant technologies and is provisionally interested to conduct this work within its existing mycoplasma research programme. The most important constraint which needs to be overcome is that VLA lacks the field strains required.

23. The Veterinary Laboratories Agency (VLA) management should be requested by FAO and AU-IBAR to conduct the study and the FAO/OIE World Reference Laboratory for CBPP be requested to make available to VLA, the required strains.

III. Studies on the Safety and Impact of Antibiotics on the Consumer

Introduction

The widespread use of antibiotics and their control are increasingly important for the safety of livestock products in developing countries.

Considerations and Specific Recommendation

Antibiotic residues in milk and meat products have been widely studied but no efficient systems to monitor and enforce their recommended use in developing countries are in place.

24. Monitoring systems for antibiotic residues and systems aimed at achieving compliance with the recommended use of antibiotics should be encouraged to minimize the impact of antibiotic residues on the consumer.
FAO-OIE-AU/IBAR-IAEA
Consultative Group Meeting on CBPP in Africa
Towards sustainable CBPP control programmes for Africa
(Rome, 12 – 14 November 2003)

List of Participants

Roger D. Ayling
Research Scientist
Veterinary Laboratories Agency (Weybridge)
Woodham Lane, New Haw
Addlestone, Surrey
KT15 3NB
U.K.
Phone: 0044 (0) 1932 357 616
Fax: 0044 (0) 1932 357 423
Email: r.d.ayling@vla.defra.gsi.gov.uk

Daouda Bangoura
Docteur Vétérinaire
Chef de Division des Services Vétérinaires
Direction Nationale Élevage
Republique de Guinée
Phone: 00244 11 29 14 68
Email: daoudabang@yahoo.fr
saf.dne@biasy.net

John B. Bashiruddin
Research Scientist (Meeting Secretary)
32 The Street
Tongham
Farnham
Surrey GU10 1DH
Phone 0044 1252 783 928
Email: john.bashiruddin@btopenworld.com
Folosu E. Fasanmi  
Director  
Livestock & Pest Control  
Dept. of Livestock & Pest Control Services  
Fed. Ministry of Agriculture & Rural development  
New Secretariat, Area 11  
P.M.B. No. 135  
Garki, Abuja  
Nigeria  
Phone: 00234 9 3140 337  
Fax: 00234 9 3140 336  
Email: folusofasanmi@yahoo.ca

Joachim Frey  
Professor  
Institute of Veterinary Bacteriology  
Laenggasstrasse 122  
University of Bern  
CH-3001 Bern  
Switzerland  
Phone: 0041 31 631 2414  
Fax: 0041 31 631 2634  
Email: joachim.frey@vbi.unibe.ch

Otto J. B. Hübschle  
Head  
Veterinary Laboratory Services  
P. Bag 13187  
Windhoek  
Namibia  
Phone: 00264 61 237 684  
Fax: 00264 61 221 099  
Email: o.huebschle@cvl.com.na

Matthieu Lesnoff  
Agronomist  
Livestock Production Modelling  
ILRI  
PO Box 5689  
Addis Ababa  
Ethiopia  
Phone: 00251 1 463 215 ext 137  
Fax: 00251 1 461 252  
Email: m.lesnoff@cgiar.org
Moto Peter C. Mangani  
Deputy Director  
Research and Specialist Services  
Box 50060  
Lusaka  
Zambia  
Phone: 00260 1 252 608  
Fax: 00260 1 252 608  
Email: aphhq@zamnet.zm

Flora Mbithi  
Veterinary Research Officer (KARI)  
(Visiting Scientist at ILRI)  
International Livestock Research Institute  
PO Box 30709  
Nairobi, 00100  
Kenya  
Phone: 00254 020 630 743  
Fax: 00254 020 631 499  
Email: fmbithi@cgiar.org

John Bernard March  
Moredun Research Institute  
Pentlands Science Park  
Bush Loan  
Penicuik  
EH26 0PZ  
Scotland, UK  
Phone: 0044 131 445 5111  
Fax: 0044 131 445 6235  
Email: John.March@mri.sari.ac.uk

Frederick Lusonzi Musisi  
Animal Production and Health Officer  
Subregional Office for Southern and East Africa (SAFR)  
FAO  
6th (& 11th) Floor Old Mutual Centre  
Cnr. Jason Moyo Avenue/Third Street  
PO Box 3730  
Harare  
Zimbabwe  
Phone: 00263 4 253 655/7  
Fax: 00263 4 700 724  
Email: fred.musisi@fao.org  
fm141047@kla1.afsat.com
Robin Nicholas
Microbiologist
Veterinary Laboratories Agency (Weybridge)
Woodham Lane, New Haw
Addlestone, Surrey
KT15 3NB
U.K.
Phone: 0044 1932 357 379
Fax: 0044 1932 357 423
Email: r.a.j.nicholas@vla.defra.gov.uk

Attilio Pini
Veterinary Officer
Istituto Zooprofilattico
Abruzzo & Molise
64100 Teramo
Italy
Phone: 00390861 332 228
Fax: 00390861 332 251
Email: a.pini@izs.it

José Regalla
Head
Department of Bacteriology
Laboratorio Nacional de Investigção Veterinaria
Estrada de Benfica 701
1549-011 Lisboa
Portugal
Phone: 00351 21711 5339
Fax: 00351 21711 5236
Email: jose.regalla@lniv.min-agricultura.pt

Mark M. Rweyemamu
6 Robinsdale
Knaphill, Woking
Surrey GU21 2LQ
United Kingdom
Phone: 0044 1483 473774
Email: MarkRweyemamu@hotmail.com
mark.rweyemamu@btinternet.com
or
PO Box 9973
Dar es Salaam
Tanzania
Phone: 00255 22 2780 420
Boubacar M'Baye Seck  
Veterinary Vaccines Specialist  
FAO Consultant  
BP 1317  
Bamako  
Mali  
Phone: 00223 678 8271 or 00233 224 8994 
Fax: 00223 224 9809  
Email: boubacarmbaye@cefib.com  
Bm_seck@yahoo.com

Ditutala Lucas Simão  
General Director  
Veterinary Research Institute  
Ministerio da Agricultura e do Desenvolvimento Rural  
Instituto de Investigacao Veterinaria  
Phone: 00244 2 372 873 or 00244 9231 9393  
Fax: 00244 2 372 873  
Email: iiv@snet.co.ao

Salome Wanyoike-Kairu  
Senior Veterinary Officer  
Central Veterinary Laboratory  
PO Kangemi-00625  
Ministry of Livestock and Fisheries Dev.  
Kenya  
Phone: 00254 020 632 231  
Fax: 00254 020 631 273  
Email:

Hezron Okwako Wesonga  
Veterinary Research Officer  
National Veterinary Research Center  
Kenya Agric Research Institute  
PO Box 32  
Kikuyu  
Kenya  
Phone: 00254 66 32000  
Fax: 00254 66 32450  
Email: h_Wesonga@yahoo.com
Aboubakar Yaya
Vétérinaire
Laboratoire National Vétérinaire
B.P. 503 Garoua
Cameroun
Phone: 00237 227 1305 or 00237 999 9818
Fax: 00237 999 9875
Email: lanavet@iccnet.cm

AU-IBAR

Rene Bessin
Ag. Chief
Animal Health Section
PACE Coordinator
AU-IBAR
PO Box 30786
Nairobi
Kenya
Phone: 00254 2 338 544 or 00254 2 251 517
Fax: 00254 2 226 565
Email: rene.bessin@oau-ibar.org

Andy Catley
AU-IBAR
PO Box 30786
00100 Nairobi
Kenya
Phone: 00254 2 226 447
Fax: 00254 2 212 289
Email: andy.catley@oau-ibar.org

Bouna Alboury Diop
Regional Coordinator Western Central Africa
AU-IBAR-PACE
Bamako
Mali
Phone: 00223 224 6053
Fax: 00223 224 0578
Email: bouna.diop@pacereg.org
Bedjeh Kebkiba  
PACE Epidemiologist  
AU-IBAR  
PO Box 30786  
Nairobi  
Kenya  
Phone: 0025420 308 185 or 0025420 251 517  
Fax: 0025420 226 565  
Email: bidjeh.kebkiba@oau.ibar.org

Jeffrey Mariner  
AU-IBAR/CAPE  
PO Box 30786  
00100 Nairobi  
Kenya  
Phone: 00 254 733 398 531 (mobile)  
Fax: 00254 20 212 289  
Email: jeffreymariner@yahoo.com

Jotham Musiime  
Director a.i.  
AU-IBAR  
PO Box 30786  
Nairobi  
Kenya  
Phone: 00254 20 252 906 or 00254 20 338 544  
Fax: 00254 20 220 546 or 00254 20 226565  
Email: jotham.musiime@oau-ibar.org

Felix Njeumi  
Veterinarian – Epidemiologist  
Zonal Veterinary Advisor  
PACE-Somalia  
PO Box 74916  
Nairobi  
Kenya  
Phone: 00254 733 571 436  
Fax: 00254 20 444 8563  
Email: fnjeumi@hotmail.com
Gavin Thomson  
Main Epidemiologist  
PACE Programme  
AU-IBAR  
PO Box 30786  
Nairobi  
Kenya  
Phone: 00254 733 610 045  
Fax: 00254 20 226565  
Email: gavin.thomson@oau-ibar.org

C.I.R.A.D.

Joseph Domenech  
CIRAD-EMVT  
jusqu'au 30 Nov 2003 Ex Directeur EMVT  
Chef Service Santé Animale, AGAH à partir 1er Dec 2003

I.A.E.A.

Roland Geiger  
Technical Officer  
Joint FAO/IAEA Division  
APHS  
IAEA  
PO Box 100  
1400 Vienna, Austria  
Phone: 0043 1 2600 26063  
Fax: 0043 1 2607  
Email: r.geiger@iaea.org  
geigergeiger@iaea.org

O.I.E.

Francois Thiaucourt  
CIRAD-EMVT  
TA 30/G  
34398 Montpellier Cedex 5  
France  
Phone: 0033 467 59 3723  
Fax: 0033 467 59 3798  
Email: thiaucourt@cirad.fr
FAO SECRETARIAT

Yves Cheneau  
Chief, Animal Health Service, AGAH  
Tel: 0039 06570 53531  
Email: yves.cheneau@fao.org

Juan Lubroth  
Senior Officer (Infectious Diseases/EMPRES), AGAH  
Tel: 0039 06570 54184  
Email: juan.lubroth@fao.org

David Ward  
Senior Officer (Non-Infectious Diseases), AGAH  
Tel: 0039 06570 56464  
Email: david.ward@fao.org

Peter Roeder  
Animal Health Officer (Infectious Diseases Group), AGAH  
Tel: 0039 06570 54637  
Email: peter.roeder@fao.org

William Amanfu  
Animal Health Officer (Infectious Diseases Group), AGAH  
Tel: 0039 06570 56493  
Email: william.amanfu@fao.org

Ms Fairouz Larfaoui  
Consultant (EMPRES-i), AGAH  
Tel: 0039 06570 56435  
Email: fairouz.larfaoui@fao.org

Ms Hanan Mohammed  
Visiting Scientist (Parasitic Diseases Group), AGAH  
Tel: 0039 06570 56750  
Email: hanan.mohammed@fao.org

Ms Lucy Mensah  
Bilingual Typist, (Infectious Diseases Group), AGAH  
Tel: 0039 06570 52635  
Email: lucy.mensah@fao.org

FAO, AGAH Fax: 0039 06570 53023 0039 06570 55749
AGENDA

FAO-OIE-AU/IBAR-IAEA

Consultative Group Meeting on CBPP in Africa

12 – 14 November 2003, FAO Headquarters, Rome, Italy

Chairman: Y. Cheneau - Chief, Animal Health Service of FAO
Secretariat: FAO Animal Health Service, Rome
Rapporteur: John Bashiruddin, UK
Theme: Towards sustainable CBPP control programmes for Africa

AGENDA

Wednesday, 12 November 2003: Austria Room, C 237

Session Chair        Y. Cheneau, FAO, Chief Animal Health Service

09:00 – 09:15  Opening Remarks    F. Guerrieri, Chief, TCEO Emergency Operations
09:15 – 09:25  Principal objectives of the Consultation and expected outputs  J. Lubroth, FAO
09:25 – 09:50  Sustainability of FAO technical support for CBPP control  W. Amanfu, FAO
09:50 – 10:20  Break for Coffee and Group Photograph

Session Chair: CBPP Control Strategies  J. Domenech, Director CIRAD-EMVT

10:20 – 10:40  Analysis of CBPP control strategies as proposed by PACE member countries  B. Kebkibah, AU-IBAR Nairobi, Kenya
10:40 – 11:00  CBPP epidemiological situation in SADC countries and strategies for control  F. Musisi, FAO-SAFR Harare, Zimbabwe
11:00 – 11:20  The dynamics of CBPP endemism and development of effective control strategies  
J. Mariner, Consultant  
USA

11:20 – 11:40  Mathematical model for intra-herd transmission of CBPP  
M. Lesnoff, CIRAD-EMVT  
Addis Ababa, Ethiopia

11:40 – 12:30  Discussions on control strategies

12:30 – 14:00  Lunch break

Session Chair:  
Tools for CBPP control – vaccines  
J. Musiime, Director,  
AU/IBAR, Nairobi, Kenya

14:00 – 14:20  Molecular mechanisms of virulence and antigencity of MmmSC: conclusions for prevention & control of CBPP  
J. Frey, IVB  
Bern, Switzerland

14:20 – 14:40  An inactivated vaccine exacerbates the effects of CBPP  
R.A.J. Nicholas, VLA  
Weybridge, U.K.

14:40 – 15:00  Studies on reversion to virulence by strain T1/44  
H. Wesonga, KARI  
Nairobi, Kenya

1500 – 15:20  Studies on the dose effect of vaccinations with T1/44  
A. Yaya, LANAVET  
Garoua, Cameroon

15:20 – 15:40  Break

15:40 – 16:00  Improved formulations for existing CBPP vaccines  

16:00 – 17:00  Discussions on tools for CBPP control-vaccines

17:30 – 19:00  Cocktails  
Indonesia Room, 8th Floor C

Thursday, 13 November 2003: Philippine Room, C277/281

Tools for CBPP control – use of antibiotics and diagnostic tests

Session Chair:  
J. Frey, Berne

08:30 – 08:50  CBPP: Research trends  
F. Thiaucourt, CIRAD-EMVT  
Montpellier, France

08:50 – 09:10  Preliminary results on the efficacy of tetracycline treatments against CBPP  
F. Thiaucourt, CIRAD-EMVT  
Montpellier, France

09:10 – 09:30  Surveillance and testing strategies for the diagnosis of CBPP-results of an FAO-IAEA coordinated research programme on the monitoring of CBPP in Africa  
R. Geiger, IAEA  
Vienna, Austria
<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:30 – 09:50</td>
<td>Diagnostic and epidemiological procedures for CBPP eradication programme in Portugal and strategic prototype for CBPP control in African countries</td>
<td>J. Regalla, LNIV</td>
<td>Lisbon, Portugal</td>
</tr>
<tr>
<td>09:50 – 10:10</td>
<td>Use of Participatory techniques to measure the impact of CBPP relative to other major diseases</td>
<td>A. Catley, CAPE</td>
<td>Nairobi, Kenya</td>
</tr>
<tr>
<td>10:10 – 10:30</td>
<td>Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30 – 10:50</td>
<td>CBPP Avis Presentation</td>
<td>M. Rweyemamu, AVIS</td>
<td>London, UK</td>
</tr>
<tr>
<td>10:50 – 11:10</td>
<td>CBPP Policy Document of PACE</td>
<td>G. Thomson, PACE</td>
<td>Nairobi, Kenya</td>
</tr>
<tr>
<td>11:10 – 11:30</td>
<td>Evaluation of immunogenicity and efficacy of vaccination</td>
<td>F. Mbiti, ILRI</td>
<td>Nairobi, Kenya</td>
</tr>
<tr>
<td>11:30 – 12:30</td>
<td>Discussions on the use of antibiotics/diagnostic tests for CBPP control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:30 – 14:00</td>
<td>Lunch break</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Session Chair Country specific control strategies**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Presenter</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00 – 14:20</td>
<td>The situation of CBPP in west and central Africa and strategies for sustainable control</td>
<td>B. Seck, LCV</td>
<td>Bamako, Mali</td>
</tr>
<tr>
<td>14:20 – 14:40</td>
<td>The status of CBPP in Nigeria with emphasis on control strategies</td>
<td>F. Fasanmi,</td>
<td>Abuja, Nigeria</td>
</tr>
<tr>
<td>14:40 – 1500</td>
<td>CBPP in Angola: Prospects for control</td>
<td>J. Simão,</td>
<td>Luanda, Angola</td>
</tr>
<tr>
<td>15:00 – 15:20</td>
<td>The situation of CBPP in view of the outbreak in the Caprivi region</td>
<td>O. Huebschele</td>
<td>Windhoek, Namibia</td>
</tr>
<tr>
<td>15:20 – 15:40</td>
<td>Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:40 – 16:00</td>
<td>Report from Guinea</td>
<td>D. Bangoura</td>
<td>Conakry, Guinea</td>
</tr>
<tr>
<td>15:40 – 16:00</td>
<td>Report from Zambia</td>
<td>P. Mangani</td>
<td>Lusaka, Zambia</td>
</tr>
<tr>
<td>16:00 – 17:00</td>
<td>Discussions on country specific strategies and avenues for harmonization of control strategies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Friday, 14 November 2003: Philippine Room, C277/281

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 – 10:20</td>
<td>Working Groups</td>
</tr>
<tr>
<td>10:20 – 10:40</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>10:40 – 12:30</td>
<td>Working Groups/ Reporting</td>
</tr>
<tr>
<td>12:30 – 14:00</td>
<td>Lunch Break</td>
</tr>
<tr>
<td>14:00 – 15:00</td>
<td>Drafting of recommendations</td>
</tr>
<tr>
<td>15:00 – 15:20</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>15:20 – 16:00</td>
<td>Plenary, Finalizing Recommendations</td>
</tr>
<tr>
<td>16:00</td>
<td>Report to Director of AGA and Closing</td>
</tr>
</tbody>
</table>

**Session Chair:**

- Working groups: W. Amanfu/J. Lubroth
- Plenary, Finalizing Recommendations: Y. Cheneau, FAO