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APPENDIX 1
ADDRESS OF WELCOME

Dr. H.A. Jasiorowski
Director, Animal Production and Health Division, FAO

Mr. Minister, Mr. Chairman, Ladies and Gentlemen,

I am pleased to welcome you here on behalf of the Director-General of FAO and the Executive Director of UNEP to the second meeting of the joint FAO/UNEP Expert Panel on Animal Genetic Resources Conservation and Management and I am especially happy that the meeting is taking place in my own country, Poland. It is

very gratifying that we have such a distinguished group of scientists from all over the world gathered here to address the important work of this meeting.

This Expert Panel was established in 1983 to advise the Director-General of FAO and the Executive Director of UNEP on critical issues relating to the conservation and management of animal genetic resources. The two Organizations have now established a commendable record of joint activities in this field, starting shortly after the establishment of UNEP in the early 1970s and continuing the pioneering work in animal genetics initiated by FAO soon after it was created 40 years ago.

Cooperation between FAO and UNEP has grown considerably during the last twelve years. It now embraces not only specific national projects, but also sub-regional interests and the development of regional and global infrastructures for the support of animal genetic work. The joint activities have included surveys of indigenous breeds, improved use of animal genetic resources for the production of meat, milk fibre and draught animal power, training activities for developing country scientists, publications, expert consultations, plans for the establishment of data banks and gene banks and plans for the preservation of endangered breeds, especially in developing countries.

The importance our host country, Poland, attaches to the subject of this Panel is clearly shown by the presence here of the Minister of Agriculture, Dr. S. Ziemia, the Deputy Minister of Environment Preservation, Dr. Michna, and the Permanent Secretary of the Ministry of Higher Education, Science and Technology, Dr. Kurowski. I wish to welcome them here and to thank them on behalf of all those participating in this meeting. I am sure we can consider their presence here as a sign of the support and interest this country is giving to FAO's activities.

I also wish to welcome the President of the Polish Society of Animal Production, Professor E.A. Potemkowska, and the Rector of the Warsaw Agricultural University, Professor M.J. Radomska.

Both FAO and UNEP attach much importance and expectations to the advice received from this Expert Panel. As you know, the focus of concern for the Panel covers all aspects of animal genetic resources which is a wide field. It includes both the improved utilization of animals and also the preservation of those animal breeds which have unique traits developed during the long process of domestication. The latter of these two objectives, namely preservation, received prime attention at the first meeting of the Expert Panel in 1983. We expect that during this meeting you will also devote attention to the problem of the improvement of utilization of genetic resources which is especially important to the developing countries where during the last decades we have observed in some cases a decline in animal protein production per caput, stagnation of livestock productivity and an increasing dependency on imported animal products. Improvement of productivity and preservation of indigenous breeds is one of our main goals in developing countries.

If mankind were still using the local indigenous breeds of animals in each place where they have been used for thousands of years, there would be no need even to consider preservation. However, we are in the middle of a huge revolution of animal genetic resources utilization which started at the beginning of this century and which has gained momentum during the last 30 years. The first impact of this revolution is concerned with breed substitution on a grand scale. It has swept through Europe, where there were old established traditional breeds in each locality until this century. Many of these have gone and have been replaced by the more productive and economically viable breeds.

The domination of milk production by Black and White cattle in Europe which has recently been improved by crossing with Holstein-Friesians from North America is testimony to this change.

Europe has responded to the need to preserve the older local breeds relatively late but in a positive way by trying to keep them where possible, as small populations of live animals which are often open for the public to

visit in natural settings. Where this is not possible, or indeed as an additional means of preservation, the European countries have also deposited semen and embryos in cryogenic gene banks for posterity. Even in highly developed countries the funds for animal genetic preservation are not easily available.

Some people view these activities as luxuries. They feel it is impossible to predict when the economic benefit of preservation will occur, and indeed there may never be such a time. On the other hand, some people regard these preservation activities as having a moral basis and obligation upon mankind, to prevent the total loss of genetic variation which is unique and cannot be replaced. We in FAO and UNEP wholeheartedly support the latter attitude.

When we turn to the developing countries we find similar principles at work, but with some special angles. First, the replacement, of the local breeds by those of higher economic value is under way. But, it is not so much a matter of breed substitution as gene substitution, through crossbreeding, since it is rare in the tropics to be able to introduce temperate breeds as purebred animals without a high level of feeding, special management and high investments and risks.

Mass crossbreeding with local animals to combine their adaptation and disease resistance with the higher production of exotic breeds is the most frequent situation in developing countries. This places a special demand upon the indigenous breeds. They are needed initially for the production of crossbreds and perhaps even over the long term if it is not possible to create a stable self-perpetuating crossbred. Yet at the same time, the indigenous breeds are becoming even more obviously uneconomic in their performance levels and farmers are reluctant to keep them. Therefore, there is evidently a need to combine the approach of improved utilization which must have priority in developing countries, with the to conserve the local animal genetic resources for the present and future use.

I am glad that it was possible to arrange this meeting of the Expert Panel on genetic resources in association with the European Association of Animal Production Symposium which is being arranged by the Polish Society of Animal Production on a similar subject.

The EAAP/PSAP Symposium is addressing particularly the issues of the use of small populations in the European context. There will be excellent opportunities therefore for members of our Expert Panel and the Polish and visiting European scientists at the Symposium to gain from each other's experience and also, I hope, to produce more than either would have produced alone.

Some of you were present at the first meeting of the Expert Panel in 1983. You will recall that much of the agenda was devoted to the topics of data banks and gene banks for animal genetic resources. I am pleased to be able to tell you that the recommendations you made at that meeting have been followed with some success by FAO and UNEP. On the subject of data banks we were able to carry out trials for two years in several countries in Africa, Asia and Latin America. As a result, we were able to design a methodology which has been adequately tested and proven in the field. We are publishing the methodology which includes the first comprehensive descriptors of the major species of domestic animals and poultry.

We trust that when the publications are to hand, we shall be successful in seeking funds for the establishment of regional data banks for animal genetic resources. But data banks should be considered as an introductory phase to the practical programmes of genetic resources preservation. Here more funds will be needed for developing countries and they may be difficult to obtain. Your advice and clear recommendations on this subject are expected.

In looking ahead to the improved use of animal genetic resources in the next years, we are aware of the great need and responsibility to rapidly improve the utilization of animals and to increase their productivity in

developing countries. We feel the need to apply the rapidly advancing science of genetic engineering to animal production also in developing countries.

It seems likely that the rapid advances towards the creation of transgenic animals may eventually have a special contribution to make to the problems of joining the productive potentials of the temperate breeds to the adaptive advantages of the indigenous breeds of the Third World. Harnessed to the existing techniques of A.I. and the growing flexibilities of Multiple Ovulation Embryo Transfer there are entirely new opportunities for us to break away from the conventional methods of field testing large numbers of animals to calculate breeding values. We know that the creation of the desired infrastructures of field testing schemes in the tropics has been a task of formidable difficulty. Rarely has a developing country been able to set up a livestock improvement scheme comparable to those of the developed world. It is exciting to look forward to the possibility of bypassing these obstacles and to implementing genetic improvement by the use of biotechnology. In this way the developing world will not fail to benefit from the advance of science which otherwise threatens to widen the technological gap rather than to diminish it between the north and the south. You may wish to advise us on this important policy question.

We are pleased that today here at the Expert Panel meeting, while you are attending in your individual capacity as scientists, you are also representing the different regions of the world in which FAO and UNEP are working. We are glad, too, that you represent many of the regional and sub-regional institutions concerned with animal breeding and genetics. We also invited a small group of Polish geneticists to attend this meeting. I am sure they will benefit by listening to your discussions.

Finally, may I convey good wishes to you for success in the meeting not only from myself, but from all your colleagues in the Animal Production and Health Division. We thank you for coming. We look forward with great interest to your recommendations on this important subject of animal genetic resources.

Dr. Hamdallah Zedan
United Nations Environment Programme
Nairobi, Kenya

It gives me a great pleasure and is my privilege to be with you on this occasion.

The United Nations Environment Programme (UNEP) is most grateful to the Secretariat of FAO for planning and organizing this consultation and to the Government of Poland for hosting it. I wish also to express our gratitude to Dr. Hohn Hodges (FAO) and Dr.- J. Kwiatkowski (Polish Institute for Cattle Breeding and Milk Production) for their tireless efforts and to the dedicated scientists coming from different countries, regions and organizations to participate in this meeting. It is indeed heartening to see such a distinguished group of experts in animal genetic resources assembled to discuss, exchange information and advise on experiences, achievements and methodologies for efficient management and conservation of the world's animal genetic resources for future needs. To all these we are most grateful.

Since the very beginning of human life on earth, man and animal have been tied together in intimate association and while domestication of plants provided humans with the main source of food and fibre, that of animals was the main source of protein, hide and fur. Over 56 million tons of edible protein and over 1 billion mega calories of energy annually come from livestock. The highly valuable protein for human consumption is over 50 percent of that produced by plant crops and in terms of fertilizer value animal waste is said to contain valuable plant nutrients which has been estimated annually to be worth over 1 billion.

With the current situation of about two thirds of the world's population already suffering from inadequate intake of protein and with the estimate that within the next 30 years the population will double, the potential deficit of

livestock products by the year 2000 staggers our imagination. It is therefore essential that man must have at his disposal both the plant and animal genetic resources that would be deployed to meet his needs.

The impact of developments in animal breeding on animal populations combined with vast technological advances in this field is likely to swing the balance in favour of the economically superior breeds to meet the requirements of the growing world populations. A natural consequence of this process is a gradual decline in genetic variability within domestic animal populations particularly in developing areas with dense populations and dwindling resources.

Just like crop plants, the presently available broad diversity of breeds (varieties, strains, races, populations, etc.) of domesticated animals is the product of thousands of years of environmental adaptations, even more consciously guided by man. Quite often the progenitors and wild relatives of presently domesticated species are extinct and hence further genetic diversification will have to rely on existing breeds. Commercial pressures for the use of exotics in developing countries has also often been excessive and the indiscriminate crossing of local breeds from outside the local environment has probably already caused serious loss of valuable local adaptations and characteristics. The tendency among decision-makers - because of the pressing needs - to put an emphasis on developmental aspects and immediate livestock improvement through imported genet material may have reduced future options for improvement of livestock production through the use of indigenous well adapted genetic material. The technical ease with which artificial insemination could be applied and the recent developments in preservation and transportation of germplasm made the loss much more rapid and drastic in recent years. As a result indigenous breeds are disappearing and small farmers and villagers cannot afford the high input breeds that are being introduced.

The loss of genetic variability is a matter of concern to both FAO and UNEP, to many other organizations and to the scientific community when viewed against present and future trends in livestock production. There are examples that can be given of breeds which were thought to have little value under a prevailing economic condition at a certain time but proved important when the requirements for breeding and production systems have changed. We must not be concerned only with domesticated animals, we should be also concerned with wild feral populations as human intervention in domestication of animals is not yet complete. Some of the species existing in the wild today may be domesticated in the future.

The UNEP concern is fully expressed in the 1980 overview on genetic resources and in the various Governing Council decisions since 1973. We are not interested in conservation for conservation nor is FAO or other active organizations. Our goal is that the broadest genetic diversity within each of those species which have significant, or potentially significant, socio-economic value among domesticated or semi-domesticated farm and pastoral animals (including their wild relatives) should be preserved and to help make such genetic material and information thereon freely accessible for utilization in environmentally sound bioproductive systems so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of the future generations.

The emerging awareness of the need for urgent positive action to conserve and develop the world's animal genetic resources as man's chief insurance against their destruction has resulted in a number of limited uncoordinated efforts. UNEP and FAO have a history of cooperation since 1974. They supported a number of joint activities in this important field. The early joint activities have included reports on declining breeds of Mediterranean sheep and on sheep breeds in Afghanistan, Iran and Turkey, surveys of trypanotolerant livestock in West and Central Africa and of prolific tropical sheep, expert consultation on animal genetic resources in Latin America and on dairy cattle breeding in the humid tropics, an inventory of special conservation herds and a high level FAO/UNEP technical consultation in 1980 to identify the world's problems facing the world's animal genetic resources and to draw a plan of action for international cooperation which was lacking. The

creation of the FAO/UNEP Panel of Experts on Animal Genetic Resources Conservation and Management and its first meeting in 1983 was a realistic step towards the establishment of an international programme in this important field and both FAO and UNEP were instrumental in the implementation of the proposals recommended by the expert consultation and the Panel where many of you have participated and contributed. Pilot trials for the establishment of data banks in Africa, Asia and Latin America, pilot inter-country conservation schemes for selected breeds which are often scattered in several countries, training of animal scientists from developing countries, publication of the Newsletter "Animal Genetic Resources Information", creation of inventories about the livestock resources of the USSR and China and plans to establish regional gene banks for cryogenic conservation of animal genetic resources in developing countries and to restore the Przewalski horse to its natural habitat are all in progress since the previous meeting of this distinguished Panel.

One major event in this area has taken place since the previous meeting. Recognizing the fact that conservation is an integral part of sustained management and utilization of genetic resources, the African Ministers' Conference on the Environment, called by UNEP and held last December decided to establish an African Regional Network for the Conservation and Management of Genetic Resources (as one of eight regional networks that will be established). Another decision which also bears relevance to animal genetic resources is the implementation of 150 village pilot projects and 30 pilot semi-arid stock-raising zones aiming at self-sufficiency in food and energy.

We shall ask you to address an appraisal on the work which was achieved or is now in progress and to advise on how to proceed. We shall be looking to you for assistance in the establishment of the African network on genetic resources. The task will undoubtedly remain the responsibility of national authorities and the scientific and learned societies. But a certain minimum guidance and coordination will be needed and the Panel meetings give a good example of the provision of scientific, technical and logistical guidance. With the collective experiences and wisdom of such a distinguished group of experts, I have no doubt that we shall all come out with concrete recommendations. We thank you for coming and we look forward with great interest to continued cooperation.

Thank you.

APPENDIX 2

FAO/UNEP JOINT EXPERT PANEL ON ANIMAL GENETIC RESOURCES

CONSERVATION AND MANAGEMENT

Terms of Reference

I. BACKGROUND AND JUSTIFICATION

In the 1930s and 40s the scientific basis for the genetic selection of animals was worked out in institutions in Europe and the United States of America. The application of these findings to practical animal breeding improvement programmes has made possible an unprecedented rate of increase in the production of food and fibre per animal. A few high performance breeds have emerged which are gradually displacing the local breeds in temperate regions. As a result there is growing concern that the latter may disappear altogether unless special efforts are made to conserve them.

The developing countries are likewise increasingly concerned about their livestock resources, especially after the many large scale introductions of high-yielding breeds from the temperate zones which often caused a

decline in the numbers of local livestock types. The latter have, through natural and man-selection, developed characteristics which make them well adapted to the often harsh environmental conditions under which livestock have to live and produce in these areas. This valuable genetic material needs to be maintained and improved as the basis for national livestock breeding programmes and policies.

The problems facing the world's animal genetic resources were identified by a high level FAO/UNEP Technical Consultation held in 1980 as being principally of three kinds. The first is a decrease in genetic variability within breeds; this is mainly a problem of the high-yielding breeds maintained in temperate zones and employed in intensive production systems. The second is the rapid disappearance of indigenous breeds and strains of domestic animals through the indiscriminate introduction of exotic breeds. The third concerns the special problem of hot, humid climates and other harsh environments common to the developing countries. Only in restricted areas within these environments is it possible to improve animal health protection measures and feeding and management practices to levels that would allow high-yielding animals from the temperate zones to be used. In these circumstances the need is to design and implement appropriate selective breeding programmes based on existing populations of animals adapted to harsh environments.

The emerging awareness of the need for urgent action to conserve and develop the world's animal genetic resources resulted in the 1970s in a number of limited and mostly uncoordinated efforts in this direction. Regional agricultural and/or animal husbandry organizations in Africa (IBAR of OAU), Europe (EAAP), Asia and the Pacific (SABRAO) and Latin America (ALPA) have set up committees on animal genetic resources and initiated studies on their management. However, there is an obvious need for the coordination of these activities as well as for the continuous exchange of information on experiences, achievements and methodologies for the efficient management and conservation of animal genetic resources for future needs. The future potential use of a specific animal genetic resource may not necessarily be confined to the country or area where it is at present threatened. Instead, it may well prove its usefulness in some other part of the world. This fact underlines the need for a strong involvement of international bodies like FAO and UNEP.

In recent years techniques for the recovery of embryos of animal and their long term conservation at supra-low temperatures have been developed and the scientific research in this field is at present in a very intensive phase of development. In consequence, new knowledge is being continuously generated on animal genetic resources conservation in vitro for both short and longer term periods. At present, of course, the development of the embryo transfer/storage techniques is geared mainly toward its immediate use for commercial purposes. But the potential for its use in connection with the conservation of animal genetic resources is great. This would require its continuous study at the global level. There is already information available that embryo banks are being established in some of the industrialized countries.

In the light of the above considerations, it was considered desirable to establish an FAO/UNEP Panel of Experts on Animal Genetic Resources Conservation and Management. This is consistent with the recommendations of the FAO/UNEP Technical Consultation (1980) that FAO and UNEP establish an appropriate coordinating mechanism for the conservation and management of the world's farm animal genetic resources at national, regional and international levels.

2. OBJECTIVES AND FIELDS OF ACTIVITY

The objectives of the Panel are to:

- Review periodically ongoing work on animal genetic resources conservation and management in different parts of the world and delineate future work programmes on a priority basis.

- Identify the principal problems hampering the exploitation and improvement of animal genetic resources at national and regional levels.
- Determine how these problems may be solved, what action programmes and projects may be developed in given situations, and how existing national and regional organizations may be strengthened for this purpose.
- Formulate ways and means of stimulating regional and global cooperation in programmes for promoting animal genetic resources development with special emphasis on mutual assistance among national and regional institutions.
- Advise the Director-General of FAO and the Executive Director of UNEP on critical issues relating to the conservation and management of animal genetic resources.

The Panel activities cover the following fields:

- i. Genetic resources conservation and management activities at global, regional and subregional levels.
- ii. The design and implementation of selective breeding programmes for animal populations in harsh environments.
- iii. The establishment and operation of data banks on animal genetic resources.
- iv. The development and application of an in situ animal genetic resources conservation methodology.
- v. Public relations and collection and dissemination of information programmes for animal genetic resources conservation in developing countries.
- vi. The development and application of an ex situ conservation methodology of animal genetic material, including disease control aspects.
- vii. The development and maintenance of inventories of animal genetic resources and of a global register of such resources.

3. MEMBERSHIP

The Panel is a standing and authoritative body of experts, the total number not exceeding 40. The number of participants at specific meetings depends on the topics dealt with, as well as on the budgetary allocations available.

Half of the members are nominated by the Director-General of FAO and half by the Executive Director of UNEP. The nominations are made through consultation between the two agencies to avoid overlapping and to make certain that subject coverage and geographic and linguistic distribution are adequately taken into account.

Responsibility for convening meetings of the Panel rests with FAO after consultation with UNEP. Secretariat arrangements will be handled by FAO.

In view of the need to obtain the broadest possible involvement in the conservation of animal genetic resources, it is envisaged that other international agencies concerned, such as UNDP and the World Bank, will be encouraged to support the Panel.

4. EXPECTED DURATION OF THE PANEL

The problems relating to animal genetic resources conservation and management will require increasing attention over a long period of time. The problems are often complex and are usually not amenable to uniform

"one time" solutions. The long generation of intervals of the larger species of domestic animals increase the time span required for arriving at viable solutions. Therefore, a long term FAO/UNEP responsibility for the coordination of animal genetic resources conservation has to be accepted. Initially, a six-year duration of the Panel is foreseen, as is an extension, taking into account experiences gained during the initial period.

5. PERIODICITY OF SESSIONS

It is planned to have a minimum of one panel session every third year. The actual need for panel work is likely to be much higher. FAO and UNEP would, however, make efforts to hold panel meetings more frequently. The parties would also meet the need for expert advice, at least partially, by correspondence with the institutions and/or individuals involved in animal genetic resources conservation work, the world over.

APPENDIX 3 MEMBERS OF THE JOINT FAO/UNEP PANEL OF EXPERTS ON ANIMAL GENETIC RESOURCES AND MANAGEMENT

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APPENDIX 4
SECOND MEETING OF THE JOINT FAO/UNEP EXPERT PANEL ON
ANIMAL GENETIC RESOURCES

Warsaw, 13-18 June 1986

AGENDA

Friday 13 June

- 08.30 1. Introduction
- 09.00 2. Welcome Address on behalf of FAO/UNEP (Dr. H.A. Jasiorowski)
3. Welcome Address try Representative of Host Government of Solano.
4. Adoption of the Agenda
5. Election of Chairman and Vice-chairman
(Dr. H. Newton-Turner and Dr. Jorge de Alba were unanimously elected)
6. Review of Business of the Meeting (Dr. John Hodges)
- 10.00 Break
- SECTION A - PRINCIPLES FOR INDIGENOUS ANIMALS IMPROVEMENT IN TROPICS Cattle
(Rapporteur: Dr. Jorge de Alba)
- 10.30 7. Professor E.P. Cunningham (Kenana in Sudan)
- 10.50 8. Dr. F.E. Madalena (Crossbreeding in Latin America)
- 11.10 9. Dr. Jorge de Alba (Criollo in Latin America)
- 11.30 10. Dr. John Hodges (Sahiwal in Kenya and Pakistan)
- 11.50 11. Discussion
- 12.00 Lunch
- Buffalo (Rapporteur: Dr. F.E. Madalena)
- 14.00 12. Dr. S. Sivarajasingam (General Asian experiences)
- 14.30 13. Dr. John Hodges (FAO/UNDP/Philippine Government Project)
- 15.00 Break
- Sheep and Goats (Rapporteur: Professor C. Novoa)
- 15.30 14. Professor A. Lahlou-Kassi (North African/Mediterranean experiences)
- 15.50 15. Dr. Pushkar Nath Bhat (Asian experiences)
- 16.10 16. Dr. L.L. Ngere (African experiences)

16.30 17. Discussion

Saturday 14 June

SECTION A (CONTINUED) - PRINCIPLES FOR INDIGENOUS ANIMALS
IMPROVEMENT IN TROPICS

(Rapporteur: Professor L.L. Ngere)

Camelidae (Rapporteur: Professor A. Lahlou-Kassi)

09.00 18. Professor C. Novoa (Latin America)

10.00 Break

Pigs (Rapporteur: Dr. Pushkar Nath Bhat)

10.30 19. Professor J.W.B. King (General)

11.15 20. Discussion on Section A (led and summarized by Professor E.P.
Cunningham)

12.00 Lunch

SECTION B - EDUCATION AND TRAINING FOR ANIMAL GENETIC RESOURCES IN THE TROPICS

(Rapporteur: Professor J.W.B. King)

14.00 21. Professor A. Lahlou-Kassi (Africa)

14.15 22. Dr. S. Sivarajasingam (Asia)

14.30 23. Professor C. Novoa (Latin America)

14.45 24. Professor E. P. Cunningham (Developed country view)

15.00 25. Discussion

15.15 Break

SECTION C - PRINCIPLES FOR PRESERVATION OF ENDANGERED SPECIES AND BREEDS IN
TROPICS

(Rapporteur: Dr. Pushkar Nath Bhat)

15.45 26. A. Teixeira Primo (Brazil National Plan)

16.05 27. Professor C. Novoa (Camelidae)

- 16.25 28. Dr. H. Newton-Turner (Sheep and goats)
- 16.45 29. Professor Imre Bodó (Principles in use of live animals)
- 17.05 30. Dr. Stefan Wierzbowski (Principles in use of cryogenic storage)

Sunday 15 June

Field Visits

Monday 16 June

* SECTION D - PRINCIPLES AND PRACTICES OF USE OF RARE BREEDS OF CATTLE, HORSES, SHEEP AND GOATS IN EUROPE

NOTE: Section D was held jointly with the EAAP/PSAP Symposium

- 09.00 31. Opening Session
- 10.00 32. Roles of animal genetic resources in production, natural environment, conservation, human enjoyment and recreation (Rapporteur: Professor J.W.B. King)
- 11.00 Break
- 11.20 33. Cattle (Rapporteur: Dr. Jorge de Alba)
- 13.00 Lunch
- 15.00 34. Horses (Rapporteur: Professor Imre Bodó)
- 16.20 Break
- 16.40 35. Sheep and Goats (Rapporteur: Professor C. Novoa)

Tuesday 17 June

(Rapporteurs: Dr. A. Teixeira Primo and Dr Y. Madkour)

- 09.00 36. Short papers on Section D
- 15.00 Horse riding show

Wednesday 18 June

SECTION E - REGIONAL GROUPS DISCUSS PRIORITY TARGETS AND DESIGN PROJECTS FOR ACTION NATIONALLY AND REGIONALLY

- 09.00 37. African Region -
(Rapporteur: Cunningham) Professor E.P. Cunningham
Professor A. Lahlou-Kassi
Dr. Y. Madkour
Dr. K.O. Adeniji
Dr. L.L. Ngere
38. Asian Region -
(Rapporteur: King) Dr. Pushkar Nath Bhat
Professor Imre Bodó
Dr. S. Sivarajasingam
Professor J.W.B. King
39. Latin American Region -
(Rapporteur: Newton-Turner) Dr. Helen Newton-Turner
Dr. Jorge de Alba
Dr. F.E. Madalena
Professor C. Novoa
Dr. A. Teixeira Primo
Dr. Stefan Wierzbowski

SECTION F - RECOMMENDATIONS PRESENTED, DISCUSSED AND ADOPTED

- 14.00 Presentation of recommendations by
rapporteurs

Section A - PRINCIPLES FOR INDIGENOUS ANIMAL IMPROVEMENT IN TROPICS

40. Cattle (Dr. Jorge de Alba)
41. Buffalo (Dr. F.E. Madalena)
42. Sheep and goats (Professor C. Novoa)
43. Camels (Dr. L.L. Ngere)
44. Camelidae (Professor A. Lahlou-Kassi)
45. Pigs (Dr. Pushkar Nath Bhat)
46. Section B - EDUCATION FRAMEWORK (Professor J.W.B. King)
- Section C - PRINCIPLES FOR PRESERVATION OF ENDANGERED SPECIES AND BREEDS IN TROPICS
47. General (Dr. Pushkar Nath Bhat)
48. Cattle (Dr. Jorge de Alba)

49. Horses (Professor Imre Bodó)

50. Sheep and Goats (Professor C. Novoa)

Section D - REGIONAL PRIORITIES AND PROJECTS

51. African (Professor E.P. Cunningham)

52. Asia (Professor J.W.B. King)

53. Latin American (Dr. H. Newton-Turner)

18.30 Conclude

APPENDIX 5
JOINT FAO/UNEP EXPERT PANEL ON ANIMAL GENETIC
RESOURCES

Warsaw, Poland, 13-18 June 1986

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APPENDIX 6 DEFINITIONS

Pertaining to Animal Genetic Resources

1. CONSERVATION

The management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. Thus conservation is positive, embracing preservation, maintenance, sustainable utilization, restoration and enhancement of the natural environment.

(This definition of CONSERVATION originates with the World Conservation Strategy, which was prepared by the International Union for the Conservation of Nature and Natural Resources (IUCN), and the following collaborative organizations: United Nations Educational, Scientific and Cultural Organization (Unesco), the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), and the World Wildlife Fund (WWF)).

2. PRESERVATION

That aspect of CONSERVATION by which a sample of an animal genetic resource population is designated to an isolated process of maintenance, by providing an environment free of the human forces which might bring about genetic change. The process may be in situ, whereby the sample consists of live animals in a natural environment, or it may be ex situ, whereby the sample is placed, for example, in cryogenic storage.

3. CONSERVATION BY MANAGEMENT

That aspect of CONSERVATION by which a sample, or the whole of an animal population is subjected to planned genetic change with the aim of Sustaining, Utilizing, Restoring or Enhancing the quality and/or quantity of the animal genetic resource and its products of food, fibre or draught animal power.

4. THREATENED (Species or breed)

A term used to describe an animal genetic resource population which is subject to some force of change, affecting the likelihood of it continuing indefinitely, either to exist, or to retain sufficient numbers to preserve the genetic characteristics which distinguish it from other populations. THREATENED is a generic term embracing more precise descriptions such as Endangered, or Vulnerable.

(It is also so used in the context of the World Conservation Strategy).

5. GENE BANK

A physical repository, in one or more locations, where the samples of animal genetic resource populations which are being preserved, are kept. These may include animals, embryos, oocytes, sperm, DNA, etc.

6. DATA BANK

The fund of knowledge comprising the CHARACTERIZATIONS which describe the genetic attributes of animal breeds or species and the various environments in which they occur; these CHARACTERIZATIONS being stored both as numerics and words in a data/word processing system which provides for the addition of further information, for amendment and for analytical use.

7. CHARACTERIZATION

The numeric/word description of:

- i. the genetic attributes of an animal species or breed which has a unique genetic identity; and
- ii. the environments to which species or breed populations are adapted or known to be only partially or not adapted.

The CHARACTERIZATION is a succinct statement, being the distillation of all available knowledge both previously published or unpublished, which contributes to the reliable prediction of genetic performance in

defined environments. It is different from the mere accumulation of existing reports or individual findings on genetic performance on specific occasions.

8. DESCRIPTORS (of species or environments)

A series of items with defined meanings for a species and its environments, which are universally used to prepare data bank CHARACTERIZATIONS of:

- i. breeds of a given species, covering the phenotypic and genetic parameters of the breed;
- ii. environments in which breeds of a given species are found, covering the natural and artificial features relevant to genetic analysis, including such items as climate, topography, endemic disease risk, feed and water supply, and management systems.

The purpose of DESCRIPTORS is to facilitate valid comparison, classification or enumeration of breeds within a species in the context of the environments existing in different countries and regions of the world.

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