

REPORT

Nitra,
Slovakia,
14-17
September
1993

Technical Consultation on Game Farming in Europe



Food and Agriculture Organization
of the United Nations

REPORT
of the
**TECHNICAL CONSULTATION ON GAME
FARMING IN EUROPE**

held in

NITRA, SLOVAKIA, 14-17 SEPTEMBER 1993

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 1993

INTRODUCTION

1. The Technical Consultation on Game Farming in Europe, was organized by the FAO Regional Office for Europe (REUR) in cooperation with the Research Institute of Animal Production of the Slovak Republic.
2. The Technical Consultation was held at the facilities made available by the Slovak Institute for Animal Production in Nitra from 14-17 September 1993.
3. The Technical Consultation was attended by 40 participants from 15 countries (Austria, Belgium, Croatia, Cyprus, Czech Republic, Finland, France, Hungary, Italy, Latvia, Norway, Portugal, Slovakia, Sweden and the United Kingdom) and two observers from New Zealand and the United States of America (Appendix 1).

I. OPENING OF THE TECHNICAL CONSULTATION

4. On behalf of the Director-General of FAO, Dr. M. Zjalic, Regional Representative for Europe, opened the Technical Consultation. He thanked the Government of the Slovak Republic and in particular, the Ministry of Agriculture and Forestry and the Institute of Animal Production (VUZV) of Nitra for the organization of this Technical Consultation and for the excellent facilities provided. A special word of thanks was extended to Dr. L. Hetényi, Director of VUZV and Mrs. M. Kadlecikova, First Secretary of the Slovak Embassy in Rome, for the excellent preparation of the Consultation and for securing its smooth running.
5. Dr. Zjalic underlined the economic importance of Game Farming in Europe and its complementarity to other production sectors as well as its future role within the terms of a growing awareness for environmentally sustainable rural development and agricultural production. He stressed the disparity of research in this field and the need for strengthening continuous exchange flow of information. This could justify the need for more active inter-country cooperation in dealing with common and less common research, development, management and socio-economic problems. He expressed the hope that this meeting could be the starting point of an active game farming research cooperation in Europe.
6. Dr. S. Fristyk, Director, Department for Science and Education of the Slovak Ministry of Agriculture and Forestry, welcomed the participants on behalf of the State Secretary for Agriculture, Ing. J. Moravcik. He stated that game farming and wild life conservation and preservation are very important from both the economical and environmental points of view in Central Europe. Dr. Fristyk stressed the strong support of the Slovak Ministry of Agriculture and Forestry for the development of research in this field and the establishment of a narrow collaboration with other interested countries in Europe. He thanked FAO for choosing Nitra for this important initiative and underlined the value of eventually developing a network to help coordinate the efforts made to meet both technico-scientific and socio-economic challenges in this marginal but important sector of the rural industries of the future.
7. The Technical Consultation adopted the Agenda and Timetable which is contained as Appendix 2 of the Report.
8. The participants of the Consultation elected Dr. L. Hetényi, Director of the Slovak Research Institute for Animal Production, as Chairman of the Technical Consultation.

9. Dr. J. Boyazoglu, Regional Office for Europe, acting as Secretary of the Technical Consultation, briefly described the procedural approach to a consultation such as this one and explained the main objectives and organization of the European System of Cooperative Research Networks in Agriculture (ESCORENA) of which a potential Game Farming Network could be an integral part. The rules of operation of ESCORENA were circulated (Appendix 3). Dr. Boyazoglu made it clear that each participating country/institution must secure and develop its own research and development budget and that the FAO Regional Office for Europe's "Network budget" must be considered only for the support of specific ad-hoc inter-country links, which cannot be covered by local/national financing.

10. If the proceedings of the Consultation are considered to be of definite scientific and technical value, it will be possible to publish them as a special number of the FAO/REUR Technical Series.

II. MAIN SCIENTIFIC COMMUNICATIONS

11. The first technical session of the Consultation was chaired by Dr. M. Zjalic. Three main reports were presented:

- The Situation and Prospects of Game Farming in Slovakia (Hetényi, L.; Hell, P.; Kartusek, V. and Slamecka, J.);
- Results of an FAO Survey on Game Farming in Europe (Bartos, L. and Siler, J.);
- Research in Game Farming: A Review of Trends (Hall, J.G. and Gonzalez, G.).

12. Dr. Hetényi presented, by a "case study" approach, the diversity and possibilities of game farming and hunting in Slovakia: Breeding of Small Game and Cloven-Hoofed Game and in particular, the actual tendencies and priorities of scientific research. Slovak institutions involved with research and development in game farming are mainly the Research Institute of Animal Production of Nitra and the University of Veterinary Medicine of Kosice. The author underlined the complementarity of game farming with other agricultural productions and the possibility of successfully replacing, under specific conditions, certain faltering animal production sectors.

13. Dr. Bartos presented the conclusions of the survey undertaken for FAO in 1992 underlining the difficulty faced with the collection of the relevant data. The full report was made available in January 1993. Data were collected by means of a questionnaire sent to all European countries. For the final report, only complete answers were retained. For each set of questions there was space for "Comments". These comments were mostly incorporated in the report's text reflecting the data presented in tables. There were great differences between the completed questionnaires. The responsibility for accuracy of the data presented in this survey rests with the individual respondents. Unfortunately, there are countries such as Austria, Ireland and the countries of the former Soviet Union, where game farms exist in large numbers from which no reply was obtained, despite repeated attempts. Still, the survey results are indicative of the situation in Europe. A major question to be answered is when/if game farming is part of the agricultural system or a hobby-like situation. This point came up also in the last paper of the morning session. The author also underlined the importance of ecological and ethological considerations in game farming.

14. Dr. Hall presented a very well documented review of the main fields of past and current research in game farming (management; health and welfare; genetics and specialised species studies; behaviour and ecology; ethology; processing, transport and handling). Overall, the following points attracted interest in the last decade:

- increase of production and its efficiency;
- improvement of animal health and the relevant protection of human health;
- limitation of environmental damage;
- conservation of genetic diversity;
- new markets and new products, diversification of the agricultural sector.

For the future the authors retained in particular, the importance of the notion of profitability (reduction of production costs, intensive versus extensive production) as well as the notion of quality and specificity of the products. Addressing public concerns in such matters as animal welfare, environmental sustainability and conservation are important without forgetting that game farming should be seen as an additional source of revenue in the rural regions. For the future, the need for production oriented research programmes and evaluation of species choice, seem important. Dr. Hall concluded by underlining that we are here in the middle of a narrow "consumers' market" and not one of producers; processing and marketing research seem thus important.

III. COUNTRY STATEMENTS

15. During the Consultation's second technical session, chaired by Prof. Hell of the Slovak Republic, thirteen country reports on the status, problems, research activities and future of the game farming sectors, were presented:

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|-----------------------|---|--|
| Belgium | - | Game Farming in Belgium (Bourguignon, J.M.; Burny, Ph.; Lebailly, Ph. and Michel, P.). |
| Croatia | - | The Hunting Fauna of Croatian Forests (Raguz, D. and Grubestic, M.). |
| Czech Republic | - | Game Farming in the Czech Republic (Siler, J.; Losos, S. and Bartos, L.). |
| Denmark | - | Deer Farming in Denmark, status as of 1993 (Vigh-Larsen, F.). |
| Finland | - | Game Farming in Finland (Nummi, P.). |
| France | - | Game Farming in France (Pinet, J.M.). |
| Hungary | - | Game Farming in Hungary (Sugar, L.; Horn, P.; Nagy, J. and Szabo, J.). |
| Italy | - | Game Farming in Italy (Olivieri, O. and Haouet, N.). |
| Latvia | - | Game Farming in the Latvian Republic (Jankavs, U.). |

- Portugal** - Game Farming in Portugal (Borges, J.M.F. and Ruela Barbosa, M.L.R.).
- Slovakia** - Game Farming in the Slovak Republic (Kartusek, V.; Slamecka, J.; Bakos, L.; Jurcik, R. and Minarova, Z.).
- United Kingdom** - Game Farming in the United Kingdom (Davies, M.).
- New Zealand** - Deer Farming in New Zealand (Westaway, P.).

This session allowed for a broad comparative discussion and evaluation of common interests and problems.

IV. TECHNICAL SUBJECT PRESENTATION

16. The third technical session, full-day, was chaired by Dr. G. Gonzales of France. The session was sub-divided into six subject sections, for each of which a rapporteur was nominated:

- | | | |
|-----|---|-----------------------------|
| 1.0 | Production Systems and Management | Rapporteur: J.M. Pinet |
| 2.0 | Reproduction and Breeding | Rapporteur: L. Sugar |
| 3.0 | Feeding and Nutrition | Rapporteur: L. Bartos |
| 4.0 | Health Protection | Rapporteur: G.P. Westerling |
| 5.0 | Processing and Transformation Practices | Rapporteur: M. Davies |
| 6.0 | Economics and Marketing | Rapporteur: C. Papamichael |

An in-depth discussion took place; the summaries of the proceedings of the six subject sections were reported as follows:

17. PRODUCTION SYSTEMS AND MANAGEMENT - (Essentially for Big Game)
- Produce a specific product of the highest quality. Venison must not be considered as just another meat. High quality meat depends a lot on the slaughtering system.
 - Produce for a well-identified consumer market.
 - "Quality" is not only linked with sanitary problems. It is now mainly what the consumers "think to be a good" quality. Breeding and management conditions play a major role in the final quality of products.

- What is the influence of specifically available feeding resources on venison quality?
- Production systems must be very low time consuming.
- Attention must be paid to prevent game produced under farming conditions being released in the field if their genetic status is not known.
- All game farmed animals must be tagged.
- In a nutshell, game farming systems are certain to be different from country to country. In some places red and sika crosses may be acceptable to the market and may be produced; in other countries, these may be unacceptable. The market decides. The production system is local and responds to the market. Accordingly, a global approach to research on systems may not be helpful. But an international understanding is needed to the effect that whatever system is used, "genetic pollution" of local wild stocks must not happen. If game is farmed for release into the wild for hunting, it must be of the same kind as that which exists already in the wild. Red x sika, wapiti x red or wild boar x domestic pig, must not be released into the wild. This international understanding is in the spirit of the World Conservation Strategy and the Rio Biodiversity Convention.

18. REPRODUCTION AND SELECTION

- Reproduction is very important in farming of any game species from the management, as well as economic point of view. Nevertheless, we are now concentrating on farmed deer species especially red deer and fallow deer.
- From a management point of view, we should not forget that reproduction, including fertility, shows seasonal patterns in the game species adapted to temperate regions. It means seasonal oestrus cycles in females and seasonal spermatogenesis in males. Both are directed by the seasonal photoperiodism, via the secretion of melatonin during the night (hours of darkness). The cause of this seasonality is the optimal timing for the production of young (species gestation period).
- Another important aspect is the very restricted reproductive patterns in the deer species used in farming. Red, fallow, sika deer and wapiti give only single births just once a year. These features together with the relatively late sexual maturity (15-18 months of age) limit the increase in the production of the farmed populations.
- Due to the amount of research undertaken during the past 10-15 years, we can now manipulate to some extent, the restricted biological characteristics of deer. Melatonin supplementation can advance the onset of breeding season and puberty in both sexes; an earlier birth season of 2-4 weeks or more.
- Effective methods have also been developed for super-ovulation/synchronization, electro-ejaculation, artificial insemination and embryo-transfer. These methods can be useful:

- to increase the progeny of a valuable individual;
 - to reduce the disease transmission risk;
 - to diminish the cost of quarantine and transportation of live animals.
- These biotechnological manipulations are however, disadvantageous in high priced quality venison production systems, for example, in France, Sweden, United Kingdom, etc.. Consumers are very much aware of the "natural production characteristics" of the product they buy at a high price as well as its intransec quality. The same is true for practices such as selective breeding and cross breeding in venison production. Thus, these aspects need to be considerably evaluated within the various national ecological systems and even according to local ethical patterns.

19. FEEDING AND NUTRITION

- There is no doubt that nutrition is one of the most essential living conditions for the successful farming of any game species. Nevertheless, there is a great range of aspects in this respect which various countries have to deal with.
- For example, while in many countries feeding game species, namely, the deer, over winter and the dry summer seasons, represents high costs, in other countries, such as Sweden, winterfeeding is derived from local resources supplied in only small amounts.
- The participants agreed that nutrition on small game farms is very different from that for deer and wild boar farming. On one side, small game farming seems to be well-established throughout Europe on a more or less equal level, on the other side, two basic groups of countries can be distinguished from the point of view of deer farming: those where farming is well-established and is a prospering industry and those which are at the initial stage of development. In the former, farming is followed by specialized groups/companies producing complex nutrition based on scientific research standards. In the latter, the farmers are facing large scale problems; they often do not pay much attention to these "specialized" tasks.
- Nevertheless, even in these latter countries, there is a sufficiently good quality base of expertise in nutrition either in universities or research institutions, usually experienced in feeding farm animals and having access to literature concerned with specific game species.
- Wild boar farms have apparently local and/or country-specific importance. In some of the countries, great emphasis is given to that, whether it is pure wild boar or not and whether it is of wild or farm origin.
- To answer the basic question, the participants of the discussion agreed that for nutrition there is no need to develop at this stage a network.

20. HEALTH PROTECTION

This item covered the larger field of animal health, product quality and human health aspects.

- Management Practices: the construction and layout of the fencing and other facilities at a farm are significant factors when it comes to health protection. This is necessary in order to minimize the risks of injuries when handling the animals, to make the animals accessible to prophylactic and therapeutic treatment, and to maintain hygienic conditions. Nutritional factors are of course of major importance in disease prevention.
- Disease Control: there are four major objectives of disease control:
 - to prevent economical losses due to disease;
 - to maintain a good public image of the industry in order to avoid marketing difficulties which might follow if the health of farmed game become a topic for public discussion;
 - certain infectious diseases, bovine tuberculosis, e.g. are zoonoses;
 - some infections, not only the mycobacterial ones, may affect conventional livestock (and vice versa).
- Diseases of major importance: with regard to these concepts, the following diseases were found to be particularly significant:
 - Deer:
 - Mycobacterial infections
 - Pasteurellosis
 - Malignant Catarrhal Fever (MCF)
 - Various parasites
 - Poisonings (Bracken Fern, e.g.)
 - Mycotoxicoes (trichothecenes, stachybothryotoxin).
 - Wild Boar:
 - Swine fever (classic and African)
 - Erysipelosis and other infections
 - Trichinosis
 - Birds:
 - Erysipelas - and other bacterial infections
 - Newcastle disease
 - Duck plague
 - Fowl pox
 - Botulism
 - Coccidiosis
- Public Health: there are regulations and demands concerning public health aspects which probably vary between countries, such as:
 - legislation on meat inspection;
 - analyses for drug residues and environmental pollutants.

- Through the discussions, the meeting came to the conclusion that some form of information exchange and communication network covering the above aspects of health protection is urgently needed in order to improve the dissemination as experience and professional knowledge to the benefit of the game farming industry in Europe.

21. PROCESSING AND TRANSFORMATION PRACTICES

This section considered the following topics:

- Post-slaughter treatments: the speed of carcass dressing, subsequent rate of cooling and hanging time are all parameters that need to be well controlled if product quality and consistency is to be standardised. The carcass hanging time may be limited by space in abattoirs and the need to separate game carcasses from others. However, the EC Farmed Game Directive is not clear on this matter and country interpretations differ.
- Carcass grading: this is a pre-requisite of any well organized marketing strategy and an objective system urgently needs to be developed for venison. The New Zealand system based on carcass weight and fat depth (GR measurement) goes somewhat towards this but some measure of conformation is also required. A well recognised system would allow venison producers to meet buyers' specifications for carcasses more precisely.
- Carcass size: there is often clear references by producers to aim for a given carcass size, often without any scientific justification. There is a need to critically examine this aspect in relation to consumer demands with regard to not only joint size but also joint price. There is evidence from other red meats that unit (or joint) price is very important to the modern housewife.
- Packaging: the meat product must be packaged in such a way that there is no deterioration in quality before it reaches the consumer. For venison, the retention of colour and good appearance are important aspects in selling the product. It was agreed that vacuum packaging with its latest technology was a very satisfactory technique in this respect for venison.
- Storage: the storage of the product at a fresh, chilled or frozen stage was discussed. The objective should always be to sell fresh venison because this is likely to be superior in quality to chilled venison, and much better than the frozen product. However, in order to cater for high and low market demands, some short to medium term storage may be needed at times. In addition, where there is a desire to extend the marketing season, chilled storage may be more practical than manipulating the system of production although it is accepted that some countries still operate the "close season" for farmed venison (e.g. France).
- New Presentation Methods: in order to gain advantage in the market place, different presentation methods should be considered to 'add value' to the production in the consumers' opinion. This has been done with success in other red meats, e.g. lamb. For venison, this is essential if the industry is to grow and attract an increasing number of venison caterers. It was strongly

felt that national recipes should be distributed throughout Europe to provide more comprehensive information for customers. This is particularly important with new meats like wild boar.

- Quality Control: much of the abattoir or slaughter environment standards expected, including hygiene, are encompassed in the EC Meat Directive, but clearer definition on a number of points is required to avoid misinterpretation. Consistency of product is very important so that the consumer knows that provided that cooking is standardised, a meat of consistent tenderness, juiciness and flavour is always produced. There must also always be a willingness to respond to new consumer demands and what they define as 'quality'.
- Velvet processing: this aspect only applies to a few European countries where velveting is not outlawed. The attributes of the dry versus frozen product should be clearly understood. The biggest problem was seen as the small quantity produced in any one country, often less than the ten ton minimum batch size traded.

22. ECONOMICS AND MARKETING

The importance of game farming as a supplier of a "natural resource" or as a meat industry factor, is of great potential value for the economy of most countries in the region. More and more farms are created for this purpose. The economics and the marketing problems of venison production have been discussed extensively during the previous five subject sections and it now seems important to also outline the role of game farming as a producer of game for hunting and environmental equilibrium:

- The naturally produced game population is not sufficient to satisfy the great demand for hunting. Game biologists went into the artificial production of game to increase its numbers and availability (release into the wild). Increased populations can have as a result, the sale of more hunting licenses and a growing revenue for the land owners and the state.
- Game can be considered as a secondary product of the primary use of the land; reared game released on agricultural or forested land increases its global profitability. Marginal lands which cannot be used for agricultural purposes can be developed successfully for game production.
- Game is an important component of our natural environment and game farming enables wildlife biologists to reintroduce game species in areas where populations are decreasing; re-establishing an improved biological balance of the environment.
- Game farming helps the tourist industry of a region by attracting hunters, bird-watchers, visitors of parks, etc.
- The release of reared game may damage the agriculture or the forestry, if the population exceeds the carrying capacity of the area and if measures are not taken to improve the habitat.

- Hunting itself contributes to the creation of a number of new job possibilities: manufacturing and trades.
- In the case of some species, the direct trade of live animals bred under farming conditions is also very profitable.

V. STUDY TOUR AND PRESENTATIONS

23. The study tour included the visit of an important pheasant breeding unit at Stitare and of the Velcive Fallow Deer and Aquaculture Cooperative Experimental Station and Production Centre managed by the Research Institute of Animal Production, Nitra. During the second part of the day, the participants had the opportunity to visit the game farming facilities of the Toplocani State Domain and Forests.

24. On Wednesday, 15 September 1993, an interesting comparative presentation of fallow deer carcasses produced under experimental game farming conditions, complemented the day's proceedings.

VI. RECOMMENDATIONS FOR FUTURE ACTIVITIES AND ADMINISTRATIVE MATTERS

25. During the Technical Consultation on Game Farming in Europe held in Nitra, Slovakia, 14-17 September 1993, three recommendations were considered, namely:

Recommendation 1 (15 September 1993):

The meeting recommended that an ESCORENA ad-hoc working group be formed to carry out the following business over the next two years:

- form an inventory and classification of game farming systems and organizations;
- investigate the possibility of developing a newsletter on matters of current interest in game farming and if possible, commence its production and circulation;
- request FAO/REUR to publish the proceedings of this Technical Consultation as soon as feasible;
- approach FAO/REUR to organize a meeting at the end of 1995 to review progress on the major problem areas of game farming in Europe and make recommendations.

This recommendation was made by S.J.G. Hall (United Kingdom) and seconded by C. Papamichael (Cyprus). It was carried on a show of hands. Twelve of the fifteen countries present voted in favour, no-one against.

Recommendation 2 (15 September 1993):

The meeting recommended that the Coordinating Centre of the ESCORENA Working Group be situated at INRA (Toulouse) and that G. Gonzales or one of his colleagues act as Coordinator. The other members of the Working Group could be agreed upon subsequently.

This recommendation was made by S.J.G. Hall (United Kingdom) and seconded by M. Davies (United Kingdom) and N. Haouet (Italy). It was carried unanimously.

Subsequently, the meeting agreed that the following persons be appointed to the Working Group: L. Bartos (Czech Republic), S.J.G. Hall (United Kingdom), L. Hetényi (Slovak Republic), M. Haouet (Italy) and G.B. Westerling (Finland).

Recommendation 3 (17 September 1993):

The meeting underlined that in order to favour the development of game farming, it is important to have a rapid exchange of technico-economic and regulatory information. The success of individual farming operations depends largely on the knowledge that farmers and professional organizations have on technical innovations and their rapid diffusion. The availability of knowledge on economic performances, conservation implications, animal health and legislative changes is just as important (deer, wild boar and small game farming).

The Institut National Agronomique, Paris - Grignon (Fauna Department, Prof. J.M. Pinet) is proposed as a central point for the collection of all relevant information (to be sent from the national focal points periodically and in English only). They will assure its homogenisation and publication in the form of an information note to be produced at least twice a year.

The recommendation was made by J.M. Pinet (France) and seconded by P. Michel (Belgium) and was carried unanimously.

VII. CLOSING OF THE CONSULTATION

26. The Chairman of the Technical Consultation, Dr. L. Hetényi (Slovakia) thanked all those present for their active participation and contributions to the Consultation's proceedings. He thanked FAO for its interest, assistance and support in developing this important activity.

27. Dr. J. Boyazoglu, Regional Office for Europe (FAO), again thanked the Host Government and the Research Institute of Animal Production, Nitra, for the excellent organization of the Consultation, the most interesting technical study tour arrangements and for the warm hospitality received. He stressed that during these three days, the participants from 17 countries had discussed the problems and needs of the game farming sector in Europe with openness and an excellent spirit of collaboration.

APPENDIX I

Technical Consultation on Game Farming in Europe
Nitra, Slovak Republic, 14-17 September 1993
List of Participants

Consultation technique sur l'élevage du gibier en Europe
Nitra, République slovaque, 14-17 septembre 1993
Liste des participants

Consultación técnica sobre la cría de animales de caza en Europa
Nitra, República Eslovaca, 14-17 septiembre 1993
Lista de participantes

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AGENDA AND TIMETABLE

Tuesday, 14 September 1993

- | | |
|---------------------|---|
| 09.00 - 09.30 hours | Registration |
| 09.30 - 10.00 hours | 1. Opening of the Consultation |
| | 2. Election of Chairman |
| | 3. Adoption of the Agenda and Timetable |
| 10.30 - 13.00 hours | 4. Overall review of production and research activities in Europe |
| | - The Situation and Prospects of Game Farming in Slovakia |
| | - Results of an FAO Survey on Game Farming in Europe |
| | - Research in Game Farming: A Review of Trends |
| 14.30 - 17.30 hours | 5. Presentation of Country Reports on the Status of Game Farming in Participating Countries: |
| | - Belgium; Croatia; Czech Republic; Denmark; Finland; France; Hungary; Italy; Latvia; Portugal; Slovakia; United Kingdom; New Zealand |

Wednesday, 15 September 1993

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| 09.00 - 16.00 hours | 6. Subject Sections: Scientific Presentations and Discussion |
| | - Systems of Production and Management |
| | - Reproduction and Breeding |
| | - Feeding, Nutrition and Ethology |
| | - Health Protection |
| | - Processing and Transformation Processes |
| | - Economics and Marketing |
| 16.00 - 17.00 hours | 7. Overall Discussion and Proposals for Future Activities. |

Thursday, 16 September 1993

Technical Study Tour

Friday, 17 September

09.00 - 10.45 hours

8. Adoption of the Report

9. Conclusions and Recommendations

11.00 - 12.30 hours

10. Closing of the Consultation

**RULES FOR THE OPERATION OF THE
COOPERATIVE RESEARCH NETWORKS IN AGRICULTURE**

PURPOSE

The purpose of establishing a cooperative research network among national research institutions and universities is to promote voluntary exchanges of information, material and experimental data in selected subject matter fields, as well as effective cooperation in research and mutually selected topics.

OBJECTIVES

The objectives of the cooperative research networks are to:

- promote voluntary exchanges of information and data on on-going research and development programmes concerning production and processing, on methods employed and on results achieved;
- undertake joint research projects according to an agreed upon methodology and division of labour;
- facilitate documentation on a subject matter field that may be required for carrying out further research or for the formulation of extension or investment projects;
- promote exchange of genetic material or other materials and equipment for experiments of common interest; and
- organize joint meetings, training courses on specialized subjects, study tours and, wherever possible, exchange of scientists and technicians.

PARTICIPATION

In view of the particular research and development needs of the regions, participation in the network is open to interested institutions in member countries of the region. Once the network is well-established, participation may be extended to all major producing countries in other regions. Any country wishing to participate in the network should notify the Director-General of FAO or the Regional Representative, designating an appropriate institution as the national liaison centre (NLC) and nominate a national coordinator for the network. The National Liaison Centre (NLC) should have the staff and facilities to make a positive contribution to the network activities and should be responsible for coordinating these activities in the country, liaising with the relevant institutes, universities and departments.

It is up to the participating institutions to decide on the conditions of their cooperation, in view of the special subject matter, working group or sub-network selected.

Each NLC should plan an active role and make effective scientific contributions to the extent of its means.

STRUCTURE

The organization structure of the network will consist of:

- (i) Network Coordination Centre (NCC)
- (ii) Coordination Board, consisting of the coordinator and the sub-network liaison officers
- (iii) Sub-network Liaison Centre (LC)
- (iv) Working Groups (WG)
- (v) National Liaison Centres (NLC).

The activities of the network will consist of (a) collaborative research projects; (b) documentation and publication of a network bulletin; (c) meetings of working groups and sub-networks; (d) network consultations. Whenever a need should arise and financial resources are available, other cooperative activities such as training courses, study tours and exchange of material or experts will be undertaken through mutual agreement.

COORDINATION CENTRE

The Network Coordination Centre (CC) is chosen by all the network members for a renewable period of four years and will have the following tasks:

- (a) be the coordination and management entity for the network;
- (b) maintain documentation on research and development activities in the region;
- (c) in cooperation with LC and NLCs organize collaborative activities, approved by the cooperating countries;
- (d) disseminate information by means of a bulletin or newsletter;
- (e) in cooperation with FAO, organize meetings, workshops, consultations, etc. at which progress and proposals for future work programmes will be examined;
- (f) prepare, every year, a progress report for general distribution to members and FAO on the progress of joint activities;
- (g) facilitate the exchange of germplasm;
- (h) maintain liaison with other regional, non-governmental and international organizations concerned with research and information on the subject matter, and provide specialist advice on specific problems if needed.

The Coordination Centre will be expected to collaborate with FAO in convening workshops and technical meetings of all the sub-networks, and in organizing the Coordination Board Meeting of the network every two years to examine progress achieved and proposals for future programmes of activities prepared by the various liaison centres and to propose appropriate means for expansion and improvement of cooperation.

COORDINATION BOARD

The Coordination Board, consisting of the coordinator of the network and the sub-network liaison officers, will meet periodically, if funds are available, every year, otherwise every two years, to review the progress achieved, problems encountered and future programme of activities. The Coordination Board Meeting should be held in connection with workshops or technical meetings organized by the sub-networks, preferably in rotation in one of the liaison centres.

Following the Coordination Board Meeting, a short report on the status and planned activities of the network will be submitted to FAO.

LIAISON CENTRES

One of the cooperation institutes of each sub-network, chosen by common agreement, will serve as Liaison Centre (LC) for the sub-network carrying out duties similar to those of the Coordination Centre, within the limits of their concern, for a period of four years. After this period, the same institute may be reconfirmed for another four-year term or, alternatively, another cooperating institution will be selected to take over this function.

Each Liaison Centre will be expected to promote research cooperation on the subject for which it is responsible, to assemble data and information obtained by cooperating institutes during the previous year and to collate and analyse them, as well as to draft proposals for the programme of future activities, for review and approval by the cooperating institutes.

The progress report and future programmes of each Liaison Centre will be submitted to the Network Coordination Centre and reviewed at the Coordination Board Meeting.

The institutes forming any sub-network shall make available to all members thereof (including the Liaison Centre) whatever relevant information and documentation on subjects dealt with which they may have.

At the request of the cooperating institutes, each Liaison Centre may organize *ad hoc* meetings.

NATIONAL LIAISON CENTRES

The National Liaison Centre will be the focal point in each participating country. The functions of the NLCs will include collation of information and periodic synthesis of results of on-going research and development projects in the country, organization of the network activities hosted by the country, and liaison with LCs and the CC.

WORKING GROUPS

It is recommended to establish some working groups with well-defined specific tasks and life span, within the sub-networks; these are easier to convene and to terminate upon completion of their task. Working groups might also be called "projects" depending on the network terminology. Nevertheless, in order for a "working group" to be established, a minimum of three institutions or universities of three different countries must be prepared to participate in the work of the said working group.

FINANCIAL IMPLICATIONS

Since the network activities will be established within the scope of the national programmes of the institutions, no particular funds would therefore be needed for such activities.

However, each participating institute should be prepared to defray, from their own budgets, whatever expenses are involved in enabling it to make its scientific contribution to joint projects.

Each institute may send one or more representatives to meetings, their travel expenses and per diem paid by their governments. The Coordination Centre and Liaison Centres shall furnish the requisite technical services for such meetings.

FAO PARTICIPATION

FAO will support and sponsor the plan for the establishment of the network in collaboration with the participating institutions, including the Coordination and Liaison Centres.

FAO will carefully follow the network's activities, mainly through information supplied by the Coordination and Liaison Centres and through personal contacts. It will systematically inform Member Governments of the results obtained.

FAO, within its available budgetary resources, may consider covering part of the cost of technical meetings, workshops and consultations, the printing and distribution of consultation documentation and subsequent reports, the follow-up activities of the network by the Coordination Centre, through trips to the Liaison Centres of each sub-network and those of the Liaison Centres to the cooperating institutions in their respective sub-networks.

In order to support the supplement work undertaken in the field of scientific cooperation within the Network, the participating institutions may agree on a minimum programme for cooperation in documentation work, essentially entailing an exchange of scientific information on various aspects of production and technology. FAO can assist the participating institutions in this field through AGRIS and CARIS.

FAO will be willing to cooperate constructively with all regional, international and non-governmental organizations interested in the attainment of network objectives.

DECISION MAKING

In the making of decisions concerning the Network's operation, each cooperating country shall have one vote, regardless of the number of its national institutes participating.

Since such cooperation is founded on voluntary adherence of participating countries, no compulsion can be exerted upon them.

These rules may be amended only by consensus of countries to which the cooperating institutes belong.

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