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## Preface

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The theme of this Workshop was Developing Breeding Strategies for Lower Input Animal Production Environments, with the objectives to:

1. Consider the 'seminal documents', case studies and other experiences to understand the need for and sustained development of straight- and cross-breeding strategies, for lower input production environments and the main farm animal species, and to draw lessons from a range of successes and failures; and
2. Draw conclusions and develop an integrated set of recommendations for the successful design, implementation and maintenance of animal genetic improvement activities in lower input production systems, emphasizing the policy, technical and operational needs of developing countries.

These conclusions/recommendations are included in the Summary of Workshop Outcome section of these Proceedings.

The Workshop was conducted in a highly structured manner. The meeting was operated by a Workshop Facilitator, Dr Maurice Bichard. There was no presentation of papers at the Workshop. The participants split into working groups. These working groups had each a pre-briefed Leader. The composition of the groups was:

**Leaders: Leo Dempfle; Fernando Madalena; Brian Wickham**

**Members:**

Birgitta Danell	Jumaliev Akylbek	Ahmed Abdelaziz
M'naouar Djemali	Robert Banks	John Gibson
Andreas Georgoudis	El Mostafa Darfaoui	Ab. Groen
Euclides Kepler	Mamadu Diop	Steven Lukefahr
Andreas Mavrogenis	Hans Graser	Gerhard Nitter
Anna Sonesson	Hans Askov Jensen	Jan Philipsson
Andrea Rosati	Theo Meuwissen	Hardi Prasetyo
Kamlesh Trivedi	Jean-Claude Mocquot	Jaime Rodrigaños
John Woolliams	Chanda Nimbkar	Derick Swart
ChiaYapi-Gnoare	Fritz Schneider	N.R. Unnithan

ICAR and FAO staff, Jean Boyazoglu, Salah Galal and Keith Hammond participated in different group sessions without staying with a specific one all the time.

The Workshop theme was divided into a number of topics, which were sequentially treated by Working Group Sessions and a Plenary Session. A

separate Rapporteur for each Session by each Working Group enabled quality reporting with drafted documentation presentation at each Plenary Session and the Session Report drafted by the Rapporteurs immediately thereafter.

Workshop participants made use of the substantial working documentation, that is all, included in these Proceedings. This included introductory material, seminal documents and case studies. Seminal papers have been pre-prepared for key areas of breeding strategy development. The authors were requested to emphasize the need for this documentation to support a range of decision-makers in livestock development by assisting them to understand what policy, technical and operational steps are required for sustained breed utilization for food and agriculture production. The broad set of case studies focuses intensely on the experiences of people who have designed, implemented and maintained breeding programmes of various types for a range of species in different production systems and livestock policy frameworks in different regions of the world. The authors of the case studies were asked to follow a set of terms of reference so that the information they provide is focussed and can be easily extracted from their documents. These terms of reference are included at the beginning of the case study section in these Proceedings.

This by-and-large unique seminal and case study documentation plus the knowledge and experience of participants, together with their contributions during the meeting facilitated substantial and quite distinct interactions among participants.

The Workshop focussed on the strategic development within livestock production systems of sustainable genetic improvement between and within breeds, i.e. how to develop and maintain in operation breeding strategies in the (major) production environments for all important farm avian and mammalian species. This covered the establishment of livestock development objectives and breeding goals, choice and sampling of breed populations, decisions on types of breeding programmes to be used, the development of selection programmes within breeds as well as the development and maintenance of livestock development activities dealing with two or more breeds (the array of cross-breeding programmes, including the gene pool formative stages of synthetic or composite development). It also included the structural aspects of the breeding strategy, which must also provide for the dissemination of genetic improvement throughout the livestock sector. Finally, it included the economic evaluation of breeding programmes both for the pre-implementation design and in evaluating the change being realized in breeding programmes underway. A further component of the breeding strategy, the development, use and maintenance of the animal level genetic evaluation systems, will be primarily treated in future work planned by FAO and ICAR for the year 2001. A previous FAO/ICAR workshop

(Anand, India, 1997) dealt with animal recording for production system improvement by both genetic and environmental means.

Whilst the broad bases governing the development of animal breeding strategies are similar in different production systems, more emphasis was placed on the range of medium input and, to the extent possible, low input production systems; these together comprising the so-called lower input production environments. Particular emphasis was given to that major sector of the world where the needs for assistance are greatest, the developing country sector.

Terminology that was encountered during the Workshop discussions is added as Appendix 1. Please note particularly the definition for “lower input production environment”. These definitions were developed mainly by the Informal Panel of Experts on Development of the FAO Global Strategy of the Management of Farm Animal Genetic Resources.

FAO is further utilizing this Workshop as one of the important steps required to develop guidelines or decision-aids for countries to use in the development, implementation and maintenance of effective breeding programmes. These guidelines and the Workshop Proceedings will be complementary in assisting country technicians and policy makers to upgrade the sustainable intensification of their livestock production sectors. The guidelines will subsequently be integrated with system guidelines for the development of animal recording and genetic evaluation operations, and with guidelines for other essential elements for the successful management by countries of their farm animal genetic resources.

The Workshop was attended by 34 participants from 22 countries, beside ICAR and FAO staff. They were scientists, research workers, developers and practitioners in the field of animal breeding. Participation was planned to cover developing and developed countries, the most important livestock species and different world regions. Participants included most of the seminal paper authors and many of the case study writers.

The organisers of the Workshop want thank the staff of the Bella Research Station of Italy's *Istituto Sperimentale per la Zootecnia* for hosting the Workshop, for providing their excellent facilities and for their warm hospitality. ICAR and FAO would like to express their great appreciation to the Swiss Agency for Development and Cooperation for its meaningful input to the development of this Workshop and to Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) for the support of the publication of the proceedings. Dr. Cesare Mosconi's effort in the technical editing of these Proceedings is greatly appreciated

The Editors