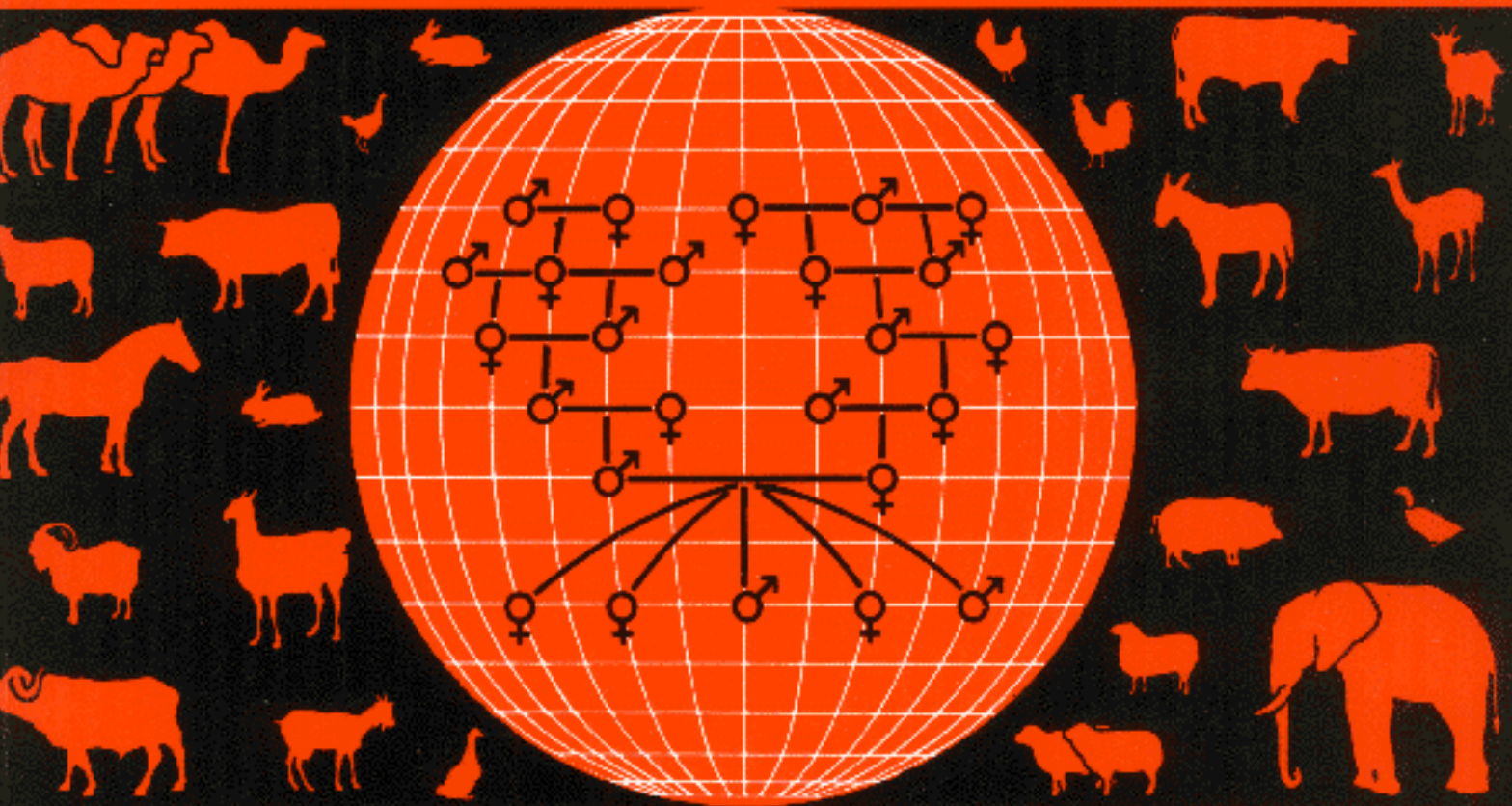


ANIMAL GENETIC RESOURCES INFORMATION

BULLETIN D'INFORMATION
SUR LES RESSOURCES GÉNÉTIQUES ANIMALES

BOLETIN DE INFORMACION
SOBRE RECURSOS GENETICOS ANIMALES

1993



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ANIMAL GENETIC RESOURCES INFORMATION will be sent free of charge to those concerned with the conservation, management or utilization of domestic livestock. Anyone wishing to receive it regularly should send their name and address to the Editor, at the address on page v.

Le BULLETIN D'INFORMATION SUR LES RESSOURCES GÉNÉTIQUES ANIMALES sera envoyé gratuitement aux personnes intéressées par la conservation l'élevage ou l'exploitation du bétail domestique. Les personnes souhaitant recevoir cette publication régulièrement voudront bien faire parvenir leurs nom et adresse à l'éditeur, à l'adresse indiquée en page v.

El BOLETIN DE INFORMACIÓN SOBRE RECURSOS GENÉTICOS ANIMALES será enviado gratuitamente a aquellos quienes estén interesados en la conservación, gestión o utilización del ganado doméstico. Si se desea recibirlo regularmente, se ruega comunicar nombre, apellido y dirección al Editor a la dirección indicada en la página v.

GUIDE TO CONTRIBUTORS

Animal Genetic Resources Information will be pleased to receive contributions up to 3000 words long in English, French or Spanish. If accepted, they will be published in the original language. Reports, news and notes about meetings, conservation and evaluation activities, and techniques would be appreciated. Manuscripts should be typed in double space and accompanied by a summary of not more than 5 percent of the original length. Photographs are acceptable but only high quality black and white prints. AGRI will also review new books on animal genetic resources. Correspondence is invited.

All contributions should be addressed to:

The Editor, AGRI, AGAP, FAO,
Via delle Terme di Caracalla,
00100 Rome, Italy

Le Bulletin d'information sur les ressources génétiques animales souhaite recevoir des articles en anglais, en français ou en espagnol, de 3000 mots au maximum. Les communications publiées paraîtront dans la langue originale. Les rapports, informations et notes concernant les réunions et les activités de conservation et d'évaluation et les techniques seraient particulièrement appréciés. Les manuscrits devront être dactylographiés en double interligne et accompagnés d'un résumé ne dépassant pas cinq pour cent de la longueur de l'original. Le Bulletin accepte les photographies à condition qu'il s'agisse de bonnes épreuves en noir et blanc. Le Bulletin rend également compte des ouvrages nouvellement parus sur les ressources génétiques animales. Un échange de correspondance est le bienvenu.

Adresser toutes les contributions à l'adresse suivante:

L Éditeur, AGRI, AGAP, FAO,
Via delle Terme di Caracalla,
00100 Rome, Italie.

El Boletín de Información sobre Recursos Genéticos Animales recibirá con mucho gusto colaboraciones de hasta 3000 palabras de extensión en español, francés o inglés. Si son aceptadas, las contribuciones se publicarán en el idioma original. Interesa recibir informes, noticias y notas sobre reuniones, actividades de conservación y evaluación, y cuestiones técnicas. Los originales deberán presentarse mecanografiados a doble espacio y acompañados de un resumen que no supere el 5 por ciento de la extensión original. Se aceptan fotografías, pero únicamente en blanco y negro y de buena calidad. AGRI también publicará reseñas de libros sobre recursos genéticos animales. Se solicita correspondencia.

Todas las contribuciones deberán dirigirse a:

El Editor, AGRI, AGAP, FAO,
Via delle Terme di Caracalla,
00100 Roma, Italia.

EDITORIAL

First of all, we are happy to welcome Keith Hammond, from the Animal Genetics and Breeding Unit (AGBU), University of New England, Armidale, Australia, who has just joined FAO as senior officer of the Animal Breeding and Genetic Resources group. His arrival gives the group an opportunity to review activities in this field and to elaborate a new programme for conservation and use of livestock diversity which will be presented in detail in the next issue of AGRI.

Since the last issue, the breed survey has been pursued with the valuable assistance of experts in a number of countries. Data received, after being validated and completed, are entered in the Global Databank at FAO Head Quarters in Rome. An article by J. Ruane (see page 13) summarizes the present status of this activity which will be continued in 1993. It is planned to publish the first World Watch List towards the middle of this year, and then to update it regularly.

The second step will be to elaborate projects for conservation and use of local breeds which are either in danger or particularly valuable. A first attempt will start in February/March 1993, on the Kuri (see Bourzat et al., AGRI N° 9) and Somba cattle in Benin, Chad and Nigeria for conserving and, where desirable, developing the breeds. Others will follow insofar as funds are available, and information is produced allowing for an evaluation of the importance and uniqueness of the relevant populations.

As a follow-up of the joint FAO/LTNEP training course on "Use of DNA technologies for Conservation and Selection of Animal Genetic Resources" organized from 14 to 26 June with the Molecular Animal Genetic Centre, Division of Tropical Animal Production, CSIRO, in Brisbane, Queensland, (J. Hetzel, R. Drinkwater), work in the field of genetic distancing has been initiated, with support given to a research project in Tanzania.

Coming to this particular issue N° 11, J. Boyazoglu tried to collect reviews of all the important books/brochures related to animal genetic resources published before the end of 1992, and not previously reported upon. We intend to produce such a review once a year, and for this we call for the readers participation: AGRI would like to receive more notes and news.

Your interest for this bulletin is confirmed by the numerous requests to be included in the mailing list. However, the future relies fully on a regular flow of manuscripts submitted for publication. Any kind of submission, whatever the length, is considered as long as it really relates to animal genetic resources. In particular we would like to publish more information on the activities in the field of conservation of genetic diversity.

PUBLICATIONS OF INTEREST

In recent years the interest for the study and conservation of Animal Genetic Resources (A.G.R.), their recording, evaluation and use under specific climatic and environmental conditions, has been growing world-wide. A number of publications, edited during the period 1990 to 1992 and not previously reported in AGRI, could be of interest to our readers. The reviews were provided by J. Boyazoglu, D. Chupin, H. de Boer and J. Hodges.

1990

Symposium sur le Porc Chinois/Chinese pig Symposium. M. Molenat and C. Legault (Editors). INRA Station de Genetique Quantitative et Appliquee, 78352 Jouy-en-Josas Cedex, France. 1990, 262pp. (French and English).

The proceedings report the symposium on Chinese pigs held 5-6 July 1990 in Toulouse, France. Topics dealt with are: Physiology of reproduction; Breeds, selection and crossbreeding; Pathology and behaviour; Nutrition and tissue growth; Quality of products. The general reports are given in full, either in English or French; all abstracts and short communications are in both languages. Altogether the 12 general reports and 35 communications give a broad and full account of current research concerning Chinese pigs all over the world.

Animal Genetic Resources. A global programme for sustainable development. G. Wiener (Editor). Proceedings of an FAO Expert Consultation, Rome, Italy, September 1990. FAO Rome, 1990, 300pp., ISBN 92-5-102926-1.

In the expert consultation, participants from all regions of the world contributed to a broad update on aspects of preservation of animal genetic resources, i.e. institutional and legal aspects; technical problems, including cryoconservation of genomes and *ex situ* preservation of genes; *in situ* preservation; world watch on endangered species. Each of these fields is extensively reviewed. In particular, international legal aspects are dealt with in detail, which is a unique case. It seems evident that the key role of FAO is rightly underlined, including the various aspects of its programme and the strategies involved. The EAAP/FAO Global Animal Genetic Data Bank (Hannover, Germany) is becoming an important centre in all the operations, and details are given on its development and prospects.

Genetic Conservation of Domestic Livestock. L. Alderson (Editor). Published by C.A.B. International, Wallingford, Oxon OX10 BDE, UK, 1990, 242pp., ISBN 0-85198-669-2.

This book is based on material presented at a conference organized by the Rare Breeds Survival Trust, held in September 1989. It has an international authorship and papers are grouped under three headings: Regional programmes (10 papers); Philosophy and methodology of conservation (7 papers); Research studies and biotechnology (6 papers).

Small Ruminants in China. An Min and Pan Jungian (Editors). IDRC, Tanglin Post Office Box 101, Singapore 9124, 1990, 184pp.

These proceedings are based on the papers presented during a workshop held in Beijing, China, October 1989. The main objective was to discuss the role and outlook of small ruminant production in China. Twenty-one papers were presented under four headings: Cashmere goats; Meat production systems; Dairy goats; Goat skin production.

Conservation et Gestion des Ressources Genctiques Bovins en France et en Europe Occidentale / Conservation and Management of Cattle Genetic Resources in France and Western Europe ITEB,149 rue de Bercy, 75595 Paris Cedex 12, France,1990, 57pp. (French).

This report (No.1744 of ITEB) follows on three previous ones (1986,1988,1989). It is divided in three parts: Statistics and conservation data of the French cattle breeds; A list of the sires whose semen presents an interest for the conservation of the French cattle genetic pool; A summary of the European breeds and conservation initiatives in various countries.

International Regulations for Milk Recording in Goats. ICAR Working Group of Experts (Editors). International Committee for Animal Recording,15A Via A. Torlonia, I - 00161 Rome, Italy,1990, 15pp. (French, English and German).

There is a world-wide interest in the recording of domestic species other than cattle. In 1986 ICAR, then still ICRPMA, set up a Working Group for the development of guidelines for milk recording in goats. These guidelines have now been adopted. They are based on proven experience with dairy cows, while incorporating the peculiarities of the goat. For member countries with significant goat milk production, the guidelines create international transparency. For member countries who have only recently begun with goat milk production, the guidelines provide an important working tool.

Milk Recording in Top Form for its Hundredth Birthday. P. Cattin-Vidal. ICAR, 15A Via A. Torlonia, I - 00161 Rome, Italy,1990, 37pp. (French, English and German).

This brochure describes the development of milk recording from its origin to date. From the mid 19th century, and increasingly towards the turn of the century, farms, institutes and animal production societies in Europe and the United States began the practice of “testing milking” to identify the best animals for breeding. The author pinpoints the origin of milk recording at the moment when it became possible to replace daily tests with periodic tests. This possibility was demonstrated by Fleischmann and his collaborators after nine years’ observation of a herd of sixty dairy cows. Their deductions were first put into practice in Vejen, in the Jutland peninsula, Denmark, from May 1st 1895. By 1935, some 4 500 000 cows were subjected to milk recording in the world.

The idea of international standardization of milk recording is an old one. As early as 1922, the International Institute of Agriculture (FAO’s predecessor) sent a questionnaire to all countries concerned, and the replies were unanimous in recognizing the need to standardize methods. But despite the efforts made until 1930 no concrete proposal for the creation of an international organization or system of regulations emerged until 1931. A meeting of European livestock experts was finally called by the FAO in 1947 to study the results so far obtained by the “International Agreement for the Unification of Cattle Herd Book Methods” that had been signed in 1936. An International Organization designed to harmonize milk recording methods, calculation procedures and formulation of results, finally saw the light of day on March 5 to 9,1951 in Rome. The “European Milk and Butterfat Recording Corrcmittee” was thus created. In 1970 it developed into an International NonGovernmental Organization under the name “International Committee for Recording the Productivity of Milk Animals” (ICRPMA). By 1985 the Committee had enlarged its activities to other productions besides cows’ milk and in 1990, considering the field of responsibilities, the name was changed into “International Committee for Animal Recording” (ICAR).

1991
Cattle Genetic Resources. C.G. Hickman (Editor). Vol. B7 in the World Animal Science Series. Elsevier Science Publishers, Amsterdam, Netherlands, 1991, 313pp., ISBN 0-44488638-9.

This book is a new volume in the Elsevier series "World Animal Science". The aim is reviewing and integrating knowledge in the field of cattle genetic resources. In this species, in particular, preventing heavy loss of genetic variability sets high requirements to administrative, financial and technological means. Inevitably a major review book of this kind takes several years of preparation and in consequence the latest developments may not be included. In most chapters references go as far as 1984, but even though developments in the field progress rapidly, it does not detract from the value of the book.

Buffalo Production Around the World. C. Chantalakana (Editor). International Buffalo Information Center, Kasetsart University, Box 1014, Kasetsart P.O., Bangkok 10903, Thailand, 1991, 80pp.

These are the proceedings of an FAO/IBIC symposium presented during the IIIrd World Buffalo Congress, held in Bulgaria in May 1991. Following a general introduction on the problems and the prospects of the buffalo sector, three papers report on the situation in Southern Asia, the Middle East and Latin America.

Goat Production in the Asian Humid Tropics. S. Sathanoo and B.W. Norton (Editors). Prince of Songkla University, Hat-Yai, Thailand, 1991, 236pp.

These proceedings are based on the papers presented at the international symposium jointly organized by the Prince of Songkla University (Thailand) and the University of Queensland (Australia) and held in Hat-Yai in May 1991. Following a session based on country reviews (Indonesia, Malaysia, Philippines, Thailand and Vietnam) there was a session on specific disciplinary review papers (5 papers). There were four sessions of contributed papers: Breeding and village flocks (4 papers); Growth and nutrition (8 papers); Reproduction (3 papers); Health (3 papers).

Raza Caprina "Florida Sevillana" / The "Florida Sevillana" Goat Breed. M. Hezzer Garcia, M. Sanchez Rodriguez, J.J. Alvarez Nunez and J.A. Sanchez Romero. Diputacion Provincial de Sevilla, Sevilla, Spain, 1991, 120pp. (Spanish), ISBN 84-86946-03-04.

This brochure describes the history, origin, geographic distribution, breed standards and population size of this local goat breed. Detailed chapters on the environment and ecological regional description, morphological and ethnological characteristics, milk production data, nutrition and management systems follow.

Razas Bovinas Autoctonas de Centro-Oeste Iberico / Local Cattle Breeds of the Iberian Center West. A. Sanchez Belda. Diputacion de Salamanca, Salamanca, Spain, 1991, 27pp. (Spanish).

Following an introductory note on the geo-agro-political composition of the central-west region of the Iberic peninsula, the main local cattle breeds, their characteristics, zone of expansion and production potential are described. These are: the Alentejana, the AlistanaSanabresa, the Arduquesa, the Avilena-Negra, the Blanca Cacerena, the Lidia, the Marinhua, the Mertolenga, the Mirandesa, the Morucha, the Retinta, the Sayaguesa and the Atigrada de Salamanca.

Microlivestock. Little-known small animals with a promising economic future.
U.S. National Research Council, National Academy Press, Washington, D.C.,
U.S.A., 1991, 449pp., ISBN 0-309-04437-6.

Microlivestock refers to species that are inherently small, including rabbits and poultry as well as to breeds that are about half or less of the size of most breeds of common livestock species. Many of the inherently small species are little known and certainly little used in temperate zones. The authors have emphasized multipurpose species which offer good prospects for smallholders. Part of their approach is the assumption that wherever land is scarce, other things being equal, small animals would be more attractive than larger ones. They are also concerned about the possible extinction of some small species of domestic animals through neglect.

The book appears to be the result of widespread consultation and credit is given to an extensive list of contributors. Nevertheless the book has been well composed and presents a coherent picture of the topic. One must hesitate to call the book comprehensive, since there is clearly no precise boundary at which to draw the line. An original survey of 300 animal scientists produced a list of more than 300 small animal species for consideration. Following extensive study and consultation about 40 species were included and the draft texts on these were reviewed by more than 400 researchers. The species chosen are grouped as follows : microbreeds of cattle, goats, sheep and pigs; poultry species; rabbits; rodents; deer and antelope; lizards and others. For each species information is provided on distribution, area of potential use, appearance and size, status, habitat and environment, biology, behaviour, husbandry, advantages and limitations. There is often a useful section which identifies needed research.

Capre della razza Orobica o di Val Gerola / Goats of the Orobica or Val Gerola.
G. Camozzini, G. Borelli, G. Cioccarelli and C. Gianoncelli. Regione Lombardia,
Servicio Provinciale Agricoltura, Como, Italy,1991, 22pp. (Italian)

This brochure describes the Orobica dairy breed of Northern Italy; origin, geographic distribution, morphology, potential, measurements and productivity statistics. A discussion on the conservation and selection of the breed and of the typical cheeses produced concludes the information.

1992

Les Races Domestiques de Ruminants Menacees dans la CEE / Endangered Ruminant Breeds in the EEC. CEE Groupe "Sauvegarde des races menacees"
(Editors). ITEB,149 rue de Bercy, 75595 Paris Cedex, France,1992, 35pp. and 34 annexes (French with English titles).

The results of the survey and the status evaluation of the endangered ruminant populations in the twelve EC countries is presented, followed by proposals and rules to favour their conservation, preservation and breeding management. The first part of the report concerns the role of local breeds within the terms of a policy of environmental management and breed monitoring. The second part is the inventory of the so-called "small breeds", or rather breeds with restricted numbers, in the EC: cattle, sheep and goats. A third part concerns the proposals made for the adaptation of the rules of the Common Agricultural Policy to help the conservation of European endangered breeds. The publication is completed by a series of tables giving, in summary, the names, numbers, production and reproduction characteristics and A.I. possibilities of the endangered breeds, in each one of the 12 EC countries.

***Le Dindon / The Turkey.* F. Poplin (Editor). Ethnozootechnie, No. 49. Societe d'Ethnozootechnie, 25 Bd Arago, 75013 Paris, France, 129pp. (French with English abstracts), ISBN 2-901081-33-0.**

This book is based on the papers presented at a meeting held in Paris in April 1992. Ten conferences give a global view of the origin and evolution of the turkey; the link between the new world and the old world; the cultural and nutritional aspects; gastronomy and diet; ethology; breeding and selection. A major paper on breeds, husbandry and management methods, systems of production and feeding completes the picture.

***Vth International Conference on Goats. Pre-Conference Proceedings.* R.R. Lokeshwar (Editor). Published by B.L. Kansal, Room 15, Pansa Hostel, IASRI Bldg, Library Av., Pusa Complex, New Delhi 110012, India, 1992. Seven volumes: 547pp., 260pp., 613pp., 228pp., 109pp., 129pp., Slpp.**

These are the full pre-conference proceedings of the Vth International Conference organized by the International Goat Association in New Delhi, India in March 1992. In Volume I are published the contributed papers, while Volumes III and II_Z include all invited papers. The fourth volume is based on the material concerning relevant Indian experiences. In the fifth volume are published the nine plenary session papers; the sixth refers to the material presented during a special workshop on "systems for sustainability" held before the conference and the seventh reports on an FAO round table on international cooperation on small ruminant research and development. Many papers refer to autochthonous goat genetic resources and their systems of production; some refer in particular to the conservation and preservation of these local populations.

***Terres Collectives en Mediterranee. Histoire, Legislation, Usages et Modes d'Utilisation par les Animaux / Collective Land Tenure in the Mediterranean. History, Legislation, Usage and Methods of Use by the Animals.* A. Bourbouze and R Rubino (Editors). IAMM, P.O. Box 5056, 134033 Montpellier Cedex, France, 1992, 277pp. (French), ISBN 2-85352-107-9.**

This is a multi-author documentation on collective land tenure and collective land use in the Mediterranean, with separate chapters describing the conditions in Morocco, Tunisia, Turkey, Greece, Israel, Yugoslavia, France, Spain, Portugal and Southern Italy. An introductory chapter by the co-ordinators of the study explains the historical background of grazing public lands and communal ownership legislations, which are in some cases a major problem from a management point of view in the regions where extensive ruminant grazing has been and still is the main source of animal protein. The book is a first and a most valuable publication on a matter of major importance to grazing systems (past and prospects) in the Mediterranean, where the implications of an archaic judicial framework vary from overgrazing to abandonment of pastoral grounds. It is a sensitive subject as well, involving political and emotional aspects, requiring an objective and firm line of approach in a multidisciplinary context. The book is a basic issue in tackling this important key problem in Mediterranean agriculture that influenced the development of the local animal genetic resources and this has a direct effect on their future preservation. It is an indispensable book for research workers, teachers and policy makers dealing with agriculture and demographical problems in the Mediterranean.

***Livestock in the Mediterranean Cereal Production Systems.* F. Guessous, A. Kabbali and H. Narjisse (Editors). EAAP Publication No. 49. Pudoc, P.O. Box 4, 67700 AA Wageningen, Netherlands, 1992, 260pp. (French and English), ISBN 90-220-1017-1.**

This book is based on the proceedings of the symposium organized by ANPA, EAAP and CIHEAM in October 1990 and held in Rabat, Morocco. It describes in depth the history, development and coherence of the region's livestock systems in the cereal producing zones (2 papers) and describes their efficiency and constraints (2 papers) with the presentation of a number of case studies (5 papers). The presentation of the available feed resources (10 papers) is followed by a very useful chapter on the available animal genetic resources and their use (8 papers). A chapter on health constraints (4 papers) and one on the assessment of development actions (7 papers) is followed by the report on the closing round table on the future of these livestock production systems.

***Training Manual on Animal Gene Bank in Asia.* D. Chupin, Chen Yaochun and Jiang Zhihua (Editors). Co-edition of the Nanjing Agricultural University and the FAO. FAO, Rome, 1992, 303 pp.**

Following the training course held in Nanjing, January 10-21, on the Strengthening of regional genebanks (see AGRI No. 8, p. 3), the Nanjing Agricultural University has published a manual gathering all the interventions. The first part addresses the genetic rationale and principles of animal genetic resources preservation, including *in situ* or *ex situ* conservation and legal and institutional aspects (lectures by A. Mariante, D.S. Balain, Jiang Zhihua and Wu Changhsin). The second part presents notes related to the lectures on reproductive aspects, semen and embryo production, storage and use (lectures by Cheng Ruihe and M. Nibart). The third part is devoted to the collection and handling of data, at the regional than at the global level (lecture by J. Ruane). Finally this manual gives a useful compilation of 12 of the country reports which were presented by the participants during the training course, summarizing the main activities in their respective countries as regards improvement and preservation of local breeds.

***Genetic Improvement of Hair Sheep in the Tropics.* R. Ponzoni. FAO Animal Production and Health Paper N° 101, 1992, 168 pp., ISBN 92-5-103144-4.**

This publication discusses the methods for improving genetically hair sheep. Unlike wool sheep, hair sheep have coats similar to those of cattle and horses. They comprise a number of different types and breeds which have been described by Fitzhugh and Bradford (1983) and Gonzalez Reyna et al. (1991). In general, hair sheep are characterized by the absence of wool, a large variation in coat colour, an extended breeding season and a remarkable adaptation to humid tropical conditions in which wool sheep do not thrive. The approach adopted in this publication - which evolved from lecture notes - is the development of guidelines for a genetic improvement programme of hair sheep taking into consideration important recommendations recently made by various authors on the present and future role of these animals: (i) Hair sheep are to be considered a very valuable resource in the tropics; (ii) Indiscriminate crossing with wool breeds should be avoided, although planned crossbreeding could have a place in a well structured industry; (iii) The conservation and genetic improvement of hair sheep should be attempted; (iv) Population screening and creation of nuclei or elite flocks should be encouraged.

As the author correctly indicates, textbooks usually give more thorough and formal coverage of the multiple issues involved in a breeding programme. However, they do not give enough details on how to design and conduct a breeding programme, particularly in new or in developing industries with few structures and little performance recording in place. The aim of this publication is to help fill that gap for hair sheep. The principles discussed are, of course, applicable to other sheep breeds or to other species.

***Animal Production and Rural Development.* P. Bunyavejchewin, S. Sangdid and K. Hangsanet (Editors). Proceedings of the 6th AAAP Congress, Bangkok, Thailand, November 1992, Vol I. Published by the An.Husb.Ass. of Thailand, Dept. Animal Science, Kasetsart University, Box 1014, Kasetsart P.O., Bangkok 10903, Thailand, 1992, 491pp., ISBN 974-88983-3-4.**

The full papers of this most interesting AAAP/FAO Symposium on Animal Genetic Resources, of special reference to the Asian-Australasian region, are published in this volume (p. 93-240). After four papers on the principles and possibilities of global conservation programmes, monitoring criteria for A.G.R., *ex-situ* conservation and the role of NGOs; nine papers describe in depth the situation and problems of A.G.R. conservation and preservation practices in the AAAP region.

***International Regulations for Milk Recording in Sheep.* ICAR Working Group of Experts (Editors). International Committee for Animal Recording, Via A. Torlonia 15/A, I-00161 Rome, Italy, 1992, 20pp. (French, English and German).**

In order to meet the needs of member countries where sheep milk is a traditional and very important factor of human diet, the International Committee for Animal Recording (ICAR), then still ICRPMA, set up a working group for “milk recording in sheep and other relevant matters.” The group was chaired by Dr. Francis Barillet of INRA, France, and it developed a guideline that is a rigorous and valuable working tool for these regions of the world where sheep milk production is important. This methodology is based on the significant experience of more than 70 years of sheep milk recording in the Mediterranean basin. While it retains the reference to the dairy cow it incorporates very successfully the peculiarities and specificities of milk sheep production systems.

Unlike the simple situation of exclusively milking soon after calving which predominates in dairy cattle, the sheep population is much more varied and complicated. The system of milking directly after lambing is normally only applied in countries or areas where milking ewes is an exceptional situation. In countries where there is a population of several million “dairy” sheep, normal husbandry systems include a suckling period (or a combined suckling plus milking period) of at least one month. Consequently, these variations in management practices play a major role in determining the differences in milk recording methods and lactation calculations used for sheep. Accordingly the international regulations for method A or B milk recording in “dairy” sheep are both informative and normative, and set the standards to facilitate the practical comparisons between countries or breeds of milked sheep. It is for this reason that this document comprises four parts: the definition of milk yield traits, the rules and standards obligatory in all situations, optional dispositions and finally, the presentation of results. For method A, the recording is undertaken by an official controller of the recording organization, while in method B, the recording is done by the farmer or his employee and is subject to relevant checks by the recording organizations. Inversely, all other types of milk recording, designed purely for the technical and economic development within a flock (commercial farmers), is called simplified recording. It does not concern the present international regulations. Its rules and methods of application are defined by local authorities and organizations, depending on husbandry conditions and the development objectives of each country or area of production. However, the local associations using this “unofficial” format of milk recording, should have the approval of the relevant national organizations.

Gene Conservation. I. Bodo (Editor). Proceedings of the 2nd International DAGENE Symposium, Illlo, Hungary, October 1992. Published by DAGENE, University of Veterinary Science, Research Institute, Budapest, Hungary, 1992, 34pp. (German and English).

These are the proceedings (abstracts) of the 3rd Workshop of the Danube Regional Association on Gene Conservation (DAGENE) held in Ulld on the 6th and 7th October 1992. Participants from seven Danubian and para-Danubian countries attended {Austria, Czech Republic, Croatia, Germany, Hungary, Romania and Hungary). The publication includes abstracts of the eleven papers and three posters presented during the meeting.

Genetic Conservation of Domestic Livestock. L. Alderson and I. Bodo (Editors), Vol II. Published by C.A.B. International, Wallingford, Oxon OX10 BDE, UK, 1992, 282pp., ISBN 0-85198-809-1.

This publication is based on some of the papers presented at the international conference organized by the University of Veterinary Science of Budapest, where it was held on the 21-26 August 1991. It has a very balanced international authorship and the papers were regrouped under four main headings: Methodology of Genetic Conservation (6 papers, including a concluding review paper); National and Regional Reports (7 papers including a summary review paper); Specific Species and Breed Studies (10 papers including a summary review paper); Biotechnology (8 papers, including a general review paper on biotechnology). This is an interesting compilation of information with some rewarding papers, a few brilliant ones and much repetition of known facts. Some of the most avantguard technology is discussed in depth and overall the material presented will be very helpful to the students of the *status-quo* and future planning of animal genetic resources conservation.

Resultats d'une enquete sur l'Etat de l'LA. dans les Pays en Developpement / Resu/ts of a Survey on the State of the Art of A.I. in Developing Countries. D. Chupin. Published as a Special Number (N° 252) of Elevage et Insemination, UNCEIA, 149 rue de Bercy, F - 75595 Paris Cedex 12, France, 1992, 26pp. (French), Com.Par. N° 21468.

This is the result of a survey that has been realized by the Animal Production Service of FAO. It describes the present status of the use of artificial insemination in the developing world. The analysis focuses on the existence and size of the AI services, on the number of doses of semen available through local production and/or importation and on the number of females inseminated in relation to the number of cattle in each country. It concerns 104 countries which replied to the survey questionnaire. Although still at a lower level than in developed countries, AI is increasingly used in the developing world, with large differences between regions. While 69 % of all cows in the world are found in developing countries, a total of 16,153,855 females have been inseminated in 1990/91, i.e. around 17 % of the total number of inseminations performed in the world.

Proceedings of the FAO Expert Consultation on Management of Global Animal Genetic Resources. J. Hodges (Editor). Rome, Italy, April 1992. FAO, Rome, 1992: Animal Production and Health Paper N°104, 309pp., ISBN 92-5-103235.

The first 22 pages present the conclusions and recommendations of the experts consultation (which have been summarized by D. Steane in AGRI 9). All the communications are then compiled and presented in *extenso*, divided in 6 chapters. The first chapter is devoted to the opening session and to general statements of E.P. Cunningham and J. Hodges, introducing the debates. The second chapter is entitled "Monitoring Animal Genetic Resources and Criteria for priority order of endangered breeds" and gathers three papers, by K. Majjala, I. Bodo and J. Ruane, on surveys

and data bases, as well as on the problems of determining the degree of risk to which a breed is exposed.

The third chapter considers practical issues for the conservation and improvement of priority breeds and a series of papers are presented on the situation of various species: buffalo (C. Chantalakhana), cattle (J. Philipson), sheep and goats (R. Ponzoni), pigs (L. Ollivier), camelidae (C. Novoa), horses (I. Bodo), poultry (R. Crawford) and wild animals closely related to the present domesticated farm animals (M. Woodford). These are followed by a paper by Prof. Barker examining the practical issues in developing indigenous breeds and in determining breeds for priority action.

The fourth chapter considers the possible role of biotechnologies in the conservation and improved use of Animal Genetic Resources (J. Hetzel and R. Drinkwater); while chapters 5 and 6 are devoted to legal (FAO Legal Office) and organizational aspects (H.A. Fitzhugh and M.S. Strauss).

***Carabao Production in the Philippines.* S.K. Ranham and P.S. Faylon (Editors). Published by the Philippine Council for Agriculture, Forestry and Natural Resources Res. and Dev., Los Banos, Laguna, Philippines. PCARD and FAO/UNDP, Books Series N° 126/1992. 235pp., ISBN 971-20-0304-3.**

This publication documents the experiences of the Philippine Carabao Research and Development Centre (PCRDC) over the past decade. The Centre was assisted by UNDPfunded and FAO-executed projects PHI/78/017 (Phase I) and PHI/86/005 (Phase II) from 1981 to 1991.

Eleven years of research and development efforts made by the team of scientists working on Philippine buffaloes (carabao) have been compiled in seven chapters, namely: carabao developments in the Philippines, genetic improvement, carabao reproduction, carabao feeding and nutrition, carabao draught power, epidemiology of common carabao diseases in the Philippines, and the socio-economics of carabao production.

These chapters describe the information which was generated as a result of the development efforts of the Centre. The information also includes data obtained through experiments. Available data was subjected to appropriate statistical analyses so as to derive reasonable conclusions. In some cases, common observations were also recorded and were considered valuable when results of well-designed experiments were in short supply.

DOCUMENTING THE WORLD'S DOMESTIC ANIMAL RESOURCES

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SUMMARY

The recently established FAO Global Data Bank for Domestic Livestock aims to document and characterise the different populations of domestic animals found throughout the world. Currently, there are 2047 entries in the data bank. A global breed survey is under way to collect basic information on each breed. From an initial analysis of population data currently available, it is estimated that a total of 390 breeds may be at risk in non-European countries. More than 200 are likely to be in developing countries.

RESUMÉ

La Banque de Données Mondiale pour le Bétail Domestique établie récemment par la FAO, a pour but de recenser et de décrire les différentes populations d'animaux domestiques existant dans le monde. Actuellement, la banque de données contient 2047 entrées. Une enquête sur les races au niveau mondial est en cours dans le but de rassembler des informations de base sur chaque race. À partir d'une analyse initiale fondée sur les données déjà disponibles, on estime que 390 races pourraient être considérées à risque dans des pays non européens. Plus de 200 se trouvent dans des pays en développement.

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1.0 INTRODUCTION

Of the many species found in the animal kingdom, man has domesticated a mere handful for his own use. Despite their small number, tremendous variation has developed over time within each species, a product of natural selection over a great range of environments and artificial selection imposed by humans.

This diversity is reflected in MASON's (1988) dictionary of livestock breeds, which is currently the most comprehensive book on the subject of domestic animal genetic resources. Excluding wild species and their crosses, there are 3213 entries in the book including 1048 sheep (33%), 861 cattle (27%), 427 horse (13%), 373 goat (12%), 355 pig (11%), 75 ass (2%) and 74 water buffalo (2%). These include 1219 (38%) for Europe, 856 (27%) for Asia, 423 (13% of total) entries for Africa, 322 (10%) for the former USSR, 206 (6%) for North and Central America, 118 (4%) for South America and 69 (2%) for Oceania (Hall and Ruane, 1993).

However, this diversity is currently under threat from several sources. Intensification of agriculture in developed countries has led to a greater reliance on a few breeds and the consequent neglect (and, in some cases, eventual extinction) of the remainder (Majjala et al., 1984). In developing countries the greatest threats to genetic diversity are the increased use of artificial insemination (CHUPIN and SCHUH, 1993), intensification of agriculture (especially for pigs and poultry) and indiscriminate crossbreeding of local breeds.

In this situation a data bank for animal genetic resources has a key role to play in listing and describing the breeds that currently exist, in documenting the erosion of these resources and in highlighting the breeds that are likely to disappear in the near future unless specific action is taken.

Work on such a data bank was initiated by the European Association of Animal Production (EAAP) in the 1980's. They organised a series of surveys of EAAP member countries and established a data bank at the Institute for Animal Breeding and Genetics in Hannover, Germany to store information on European breeds. A detailed publication describing this work is expected in 1993.

From 1989 to 1991 the EAAP also tried to recover data from non-EAAP member countries but the response was disappointing. It was then decided in 1991 that FAO would establish a data bank in Rome to deal with all non-European countries while the EAAP data bank in Hannover would concentrate solely on Europe.

The data bank in Rome, called the FAO Global Data Bank for Domestic Livestock, uses the software originally developed in Hannover. Although the software has since been modified in Rome (primarily to accommodate differences in the data available between developing and European countries) both data banks are compatible and it is planned to incorporate the EAAP information into the FAO Global Data Bank in 1993.

The most recent update (SIMON, 1992) indicates that the EAAP Animal Genetic Data Bank contains 707 entries including 5 ass, 206 cattle, 54 goat, 110 horse, 92 pig and 240 sheep breeds. The numbers in the two data banks are not strictly comparable as the FAO Global Data Bank has one entry per breed whereas the EAAP data bank has one entry per breed per country and since some breeds are found in several countries the number of breeds is less than the number of entries.

This paper describes briefly the FAO Global Data Bank and the work carried out on the data bank to January 1993.

2.0 DESCRIPTION OF FAO GLOBAL DATA BANK

Table 1 summarises the type of information that can be stored in the data bank. A wide range of subjects are covered, from basic breed characteristics such as the name, location and population size, to more detailed aspects such as genetic distancing data and conservation programmes.

3.0 DATA COLLECTION

The information entered in the data bank to date has come from the following three sources.

- i. Mason (1988): The dictionary of MASON (1988) was used as the primary information source for the data bank. For seven species (ass, buffalo, cattle, goat, horse, pig and sheep) it lists all the breeds and breed varieties existing (or thought to exist) worldwide. For each entry it provides, as a minimum, the breed name and location although, in most cases, information is also provided on the origin, physical appearance, main uses and synonyms of the breed (note that in this paper the term 'breed' also covers those described as 'breed varieties' by MASON). Almost all non-European breeds described by MASON (1988) were entered in the data bank. Those described as 'feral' or 'wild' were included while those referring to an unstable cross between breeds or to a group or collection of breeds were not.
- ii. Scientific Literature: The dictionary of MASON (1988) does not provide information on population sizes (apart from a small proportion of breeds described as rare or endangered) or production capacity. A brief search of the literature was then carried out to obtain this information. It was noticeable that population data for breeds in developing countries were scarce. Some of the books in the FAO Animal Production and Health series (especially Volumes 46 and 65 dedicated to animal genetic resources in China and the USSR respectively) were particularly useful.
- iii. FAO/UNEP Global Breed Survey: Towards the end of 1991 a breed survey (still ongoing) was initiated in all non-European countries. The primary aims of the survey were to determine exactly which breeds or breed varieties exist in each country and to identify those that are rare or in danger of becoming extinct. Brief one-page questionnaires were developed requesting basic information on population sizes and production performance, with emphasis at this early stage on the population data. FAO then made agreements with individual experts or institutions to:

TABLE 1.

Summary of information which can be stored under any entry in the data bank. The printed output for a single breed covers seven pages.

-
1. General information
 - Species (ass, buffalo, cattle, goat, horse, pig, sheep)
 - Whether the entry refers to a breed variety or a breed
 - Geographical location of entry
 - Local names, synonyms and international name (as described by Mason (1988)) of the entry
 - Names of individuals or organisations that provided information on the entry

 2. Origin and development of the breed
 - Origin of the breed
 - Whether the breed is wild or primitive
 - Whether immigration of animals from other breeds or countries has taken place in recent years
 - Description of population size, in detail or in approximate terms.
 - Degree of usage of artificial insemination and storage of semen and embryos

 3. Description of breed
 - Coat colour
 - Number and description of horns
 - Hair and/or wool type
 - Adult size and weight
 - Genetic characteristics of the breed e.g. marker genes, chromosomal aberrations

 4. Uses and qualities of the breed
 - Main uses of breed
 - Special qualities of breed e.g. disease resistance, adaptability to harsh climate or environment

 5. Management conditions
 - Type of management, housing period, feeding

 6. Production Record
 - Two ways of describing the performance record are possible a) Giving actual figures for performance traits (including reference) or b) Comparing the breed to a standard breed (preferably one that is very common) for a range of production traits. Method b) is rarely used.

 7. Additional information
 - Estimates of genetic distances to other breeds
 - Analysis of genetic material of the breed
 - Description of any conservation programme in operation for the breed
 - a. Complete one questionnaire for each breed or breed variety in their country or region, and
 - b. Examine and assess the list of entries in the Global Data Bank for their country or

region so that any breeds that have become extinct or that never existed can be deleted or, alternatively, any breeds which were not described by Mason (1988) can be included.

Once the breed questionnaires were received, the data were not automatically entered in the data bank. Instead, the questionnaires were examined in detail and correspondence initiated with the expert regarding points or questions raised by the information provided. When these were addressed satisfactorily the data were then entered. At this current stage, data have been received from a total of 52 countries and, entered in the data bank for 19.

4.0 CURRENT STATUS OF THE FAO GLOBAL DATA BANK

Table 2 shows the number of entries currently stored in the data bank. As incoming data from the breed survey identifies breeds to be added or deleted, the numbers fluctuate slightly over time. Of the 2047 breeds, 86 (4%) are wild or feral; 164 (8%) are found in more than one country and 502 (25%) are described as a variety, subvariety or strain of a breed.

As of January 1993, 38% of entries in the data bank contain some information on population size (Table 3), 39% contain some information on production performance (Table 4) while 30% contain some information on both population size and production performance (Table 5). The importance of the breed survey data is illustrated by the fact that prior to entering any of this information, these figures were 27%, 31% and 20% respectively.

On a proportional basis, data recovery to date has been highest for buffalo, cattle and sheep and for the former USSR and South America. Little information is available on asses because they were included in the data bank at a later stage (March 1992) than the other species and consequently, no information was requested on them prior to this date. Poultry and the Camelids are yet to be included.

5.0 PRELIMINARY ANALYSIS OF POPULATION DATA

Of the 777 breeds for which some population information is currently available, a total of 221 can be considered at risk in that they are described as rare, endangered or almost extinct or, where actual figures are available, they have a total population size of 5,000 head or less. A breakdown of these breeds by species and continent is presented in Table 6. A further subdivision into those found in developing and developed countries is given in Table 7.

One point of interest is the relatively large number of breeds at risk in the former USSR. The current situation is probably worse than these figures suggest since estimates of population size refer to the 1980's and much concern has been voiced that the increased culling of animals since the breakup of the USSR may have greatly accelerated the loss of domestic animal genetic resources.

Another feature of note is the relatively large number of horse breeds at risk. Although population information is available on only 88 breeds, 74% fall into this category. Most of these are in the former USSR.

A rough partition of the 221 breeds at risk between developed and developing countries reveals that over 60% are currently found in developed countries (Table 7). This however may underestimate the proportion of breeds at risk in the developing world. The classification of the former USSR as a developed country may need to be revised with the result that the number of endangered breeds in developing countries may be increased considerably.

More importantly however, it must be emphasised that at this early stage most (137 out of 221) of the breeds at risk have been identified from MASON (1988) indicating that they are rare, endangered or almost extinct. Breed extinctions and rare breeds have been documented more thoroughly in developed than in developing countries (Hall and Ruane, 1993) and MASON (1988) reflects this bias. Of the 137 identified through MASON (1988), only 41 are in developing countries.

The global breed survey is providing much needed information on population sizes in the developing world. An examination of the 84 breeds at risk not identified from Mason (1988), reveals that 50 are in developing countries. Based on the results from the global breed survey to date it is estimated that the total number of breeds at risk is likely to rise to about 390 breeds (i.e. about 19% of the total) and that the number in developing countries is likely to rise to over 200.

6.0 THE FUTURE

The immediate goal is to fulfil the main aims of the global breed survey. The number of breeds in each country will then be known, with at least a basic description of each, and the number of breeds at risk of extinction in each species will be established for the first time.

Preliminary analysis of the population data collected to date suggests that about 1 in 5 breeds may be considered at risk. For many of these breeds, especially in developing countries, little is known about them. Further work should concentrate on the breeds at risk to determine whether they really are likely to become extinct, to investigate the merits of each one and, if appropriate, to activate a practical conservation or preservation programme so that valuable genetic resources are not lost.

Although other livestock species are of importance to mankind, the Global Data Bank currently deals with only seven species. Efforts are now under way to document camel and poultry breeds in a similar fashion. Progress with these species is likely to be slower because a primary data source, similar to MASON (1988), which would provide a comprehensive description of camel or poultry genetic resources worldwide, seems to be lacking.

The information collected under the FAO Global Data Bank will play a central role in animal genetic resources programmes worldwide. The information will be made available to individuals and institutions in a variety of ways and planning is currently under way to make this possible.

7.0 ACKNOWLEDGEMENTS

The assistance of each person who provided data for the global breed survey is gratefully acknowledged.

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TABLE 2.

The number of breeds or breed varieties currently in the FAO Global Data Bank for Domestic Livestock.¹

	Ass	Buffalo	Cattle	Goat	Horse	Pig	Sheep	Total
Africa	17	7	171	59	33	9	126	422
Asia	22	57	200	151	90	143	235	898
Former U.S.S.R.	15	1	61	20	59	35	135	326
N. & Cent. America	5	1	67	12	41	35	48	209
Oceania	0	0	20	6	2	6	39	73
South America	5	2	45	11	22	17	17	19
Total	64	68	564	259	247	245	600	2047

¹ Data on European breeds, still to be incorporated (Tables 2, 3, 4, 5, 6 and 7).

TABLE 3.

The number of breeds or breed varieties in the FAO Global Data Bank for which there is currently some information about population size. The figures in brackets represent % of all entries in the data bank (see Table 2).

	Ass	Buffalo	Cattle	Goat	Horse	Pig	Sheep	Total
Africa	1	2	64	14	2	3	47	133 (32)
Asia	5	24	88	41	24	35	105	322 (36)
Former U.S.S.R.	0	1	43	11	48	22	54	179 (55)
N. & Cent. America	0	0	19	5	10	9	11	54 (26)
Oceania	0	0	10	3	1	2	8	24 (33)
South America	1	2	33	7	3	8	11	65 (55)
Total	7	29	257	81	88	79	236	777 (38)
	(11)	(43)	(46)	(31)	(36)	(32)	(39)	

TABLE 4.

The number of breeds or breed varieties in the FAO Global Data Bank for which there is currently some production information. The figures in brackets represent % of all entries in the data bank (see Table 2).

	Ass	Buffalo	Cattle	Goat	Horse	Pig	Sheep	Total
Africa	0	1	59	22	0	3	58	143 (34)
Asia	3	30	87	78	23	43	135	399 (44)
Former U.S.S.R.	0	1	40	9	30	21	53	154 (47)
N. & Cent. America	0	0	7	1	1	4	7	20 (10)
Oceania	0	0	10	2	0	1	3	16 (22)
South America	0	2	29	7	3	8	11	60 (50)
Total	3	34	232	119	57	80	267	792 (39)
	(5)	(50)	(41)	(46)	(23)	(33)	(45)	

TABLE 5.

The number of breeds or breed varieties in the FAO Global Data Bank for which there is currently some information about both population and production. The figures in brackets represent % of all entries in the data bank (see Table 2).

	Ass	Buffalo	Cattle	Goat	Horse	Pig	Sheep	Total
Africa	0	1	51	12	0	3	40	107 (25)
Asia	2	19	78	38	7	27	100	271 (30)
Former U.S.S.R.	0	1	38	7	30	21	51	148 (45)
N. & Cent. America	0	0	6	1	0	4	5	16 (8)
Oceania	0	0	9	2	0	1	3	15 (21)
South America	0	2	29	7	3	8	10	59 (50)
Total	2	23	211	67	40	64	209	616 (30)
	(3)	(34)	(37)	(26)	(16)	(26)	(35)	

TABLE 6.

The number of breeds or breed varieties currently considered at risk.

	Ass	Buffalo	Cattle	Goat	Horse	Pig	Sheep	Total
Africa	1	0	10	2	2	0	4	19
Asia	4	1	11	4	18	13	2	53
Former U.S.S.R.	0	0	10	4	35	4	11	64
N. & Cent. America	0	0	13	5	9	6	7	40
Oceania	0	0	5	2	1	1	7	16
South America	0	0	19	1	0	8	1	29
Total	5	1	68	18	65	32	32	221

TABLE 7.

*Further breakdown of the 221 breeds currently considered at risk (See Table 6).**

	Ass	Buffalo	Cattle	Goat	Horse	Pig	Sheep	Total
Australia	0	0	4	0	0	0	3	7
Canada	0	0	0	0	2	1	1	4
Former USSR	0	0	10	4	35	4	11	64
Japan	0	0	2	2	9	1	0	14
New Zealand	0	0	0	2	1	1	4	8
South Africa	0	0	1	0	1	0	2	4
United States	0	0	8	4	7	4	6	29
Total 'Developed'	0	0	25	12	55	11	27	130
Developing World	5	1	43	6	10	21	5	91
Total	5	1	68	18	65	32	32	221

NOTE ON THE LOCAL ANIMAL GENETIC RESOURCES AND THEIR CONSERVATION IN VIETNAM

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SUMMARY

The author describes the existing livestock populations in Vietnam and summarizes the local preservation policies. The selection constraints, objectives and conservation programmes are discussed.

RÉSUMÉ

L'auteur décrit les populations de bétail existant au Vietnam et donne un aperçu de la politique locale de préservation. Il examine les objectifs et les contraintes de la sélection ainsi que les programmes de conservation.

1.0 INTRODUCTION

Vietnam is situated in South-East Asia between the latitudes of 8' and 23' North. The land area is 332,000 sqkm (not including islands). The country has a tropical monsoon climate and a long sea coast. The Northern part has a rather cold winter from November to April with the average temperature being around 16^o C. The Southern part has a classical monsoon-type climate with average temperatures being in the range of 25-30^o C. Rainfall varies from 1600-2500 mm per annum.

There is a big diversity of the animal population in this tropical country. There are 265 species of wild animals distributed over the country including some rare and precious ones. There was a serious damage of wild animal life during the long war period. According to a recent evaluation by Dr. DANG HUU HUYNH 10 animal species are endangered, 18 species are vulnerable and 22 species are considered as rare.

In this paper we will discuss only the domestic animal genetic material conservation.

2.0 LIVESTOCK POPULATION

Vietnam is one of the first cradles of animal domestication in the world. Various species of livestock are known to have existed in the country since the dawn of times; this includes pigs, cattle, buffalo, horses, goats, sheep, rabbits, chicken, ducks, muscovy ducks, geese etc.

The existing animal population is as follows:

Species	1990	1991
Pigs	12,260,500	12,140,400
Cattle	3,120,800	3,151,000
Buffalo	2,854,100	2,885,600
Poultry	107,372,700	108,152,400
Goats	373,300	312,000
Sheep	1,000	1,100
Horses	141,300	-
Deer	-	10,000

For thousands of years, under the pressure of natural and artificial selection local animal populations proved to be adapted to the ecological and economic conditions. They possess valuable genetic potential as they can live on low quality forage and are resistant to tropical diseases (especially the parasitic diseases). Some breeds have a reasonable reproductive performance and produce good quality meat. Their disadvantages are small body size and poor within year productivity.

3.0 BREEDING CONSTRAINTS AND THE NEED TO CARRY OUT THE PROJECT ON ANIMAL LIVESTOCK GENETIC CONSERVATION

Poor breeding management as well as seasonal and irregular supplies of feed, particularly in the dry season, are the main constraints for the rapid genetic improvement of the local populations.

Some indigenous breeds tend to disappear due to low productivity and competitiveness with crossbred and exotic animals.

Artificial insemination in pigs is rather well practiced; the number of inseminated sows is around 60 % of the population. Evidently, the utilization of semen of exotic breeds makes the preservation of the pure native breeds more difficult. This is an evident contradiction in the actual situation and orientation towards a free marketing system. Farmers who keep the local

sows do not want to raise local litters because of price reasons. The overall poor breeding management also makes some pure breeds endangered.

The establishment and implementation of livestock conservation practices is an urgent task for the country, because it links to the development of the economy and the income of the farmers, especially those who are living in difficult environmental conditions (poor dry areas...). This will also contribute to the protection of the environment and will be useful for future development plans.

4.0 LIVESTOCK GENETIC CONSERVATION PROGRAMME: OBJECTIVES AND MEASURES

The main objectives of the conservation programme are:

1. To collect the data of animal breeds in different ecological regions throughout the country and identify certain genes: traits needed to be conserved.
2. To recover the economic traits of the local breeds which are in danger in order to keep and improve the genetic progress of livestock.
3. To assist the development of some objectives which were forgotten (like meat type sheep) or species in the process of domestication (such as *Cervus Nippon Termneric* deer).
4. To contribute to economic, scientific, cultural and tourist development.

The breeds of interest to the national conservation programme are:

(1) *Pigs*: In Vietnam the number of existing pigs is very high. In the north, Mong Cai and “T” pigs are the two popular native stocks. The Mong Cai breed is spreading throughout the country due to a good reproductive performance, while the “T” breed is less popular as these pigs are less prolific and tend to produce fatter carcasses. The project for the conservation of “T” pigs is a high priority because they are still needed by the farmers of the poor humid areas. The mini Co pig breed still exists in some parts of the central north area of the country but nobody likes keeping them, due to their economic inefficiency. The Meo and Muong Khuong pigs are mostly found in the mountainous regions. In the south of Vietnam, the Thuoc Nhieu and Ba Xuyen are the most popular breeds.

(2) *Cattle*: Vietnam Yellow cattle belongs to the humped type Aisan breed with small body size and good hardiness. The average body weight is 160-180 kg. We can find a lot of bigger sized crossbreds (crossed with Red Sindi or zebu sires).

(3) *Buffalo*: Buffalo breeds in Vietnam are of the swamp type. They are called by the geographic name of the region where they are kept, such as Yen Bai and Tuyen Quang. They are also called sometimes according to their size, namely, Ngo (Big) buffalo or De (Small) buffalo. The average body weight is 320-350 kg.

(4) *Horses*: Horses in Vietnam are all of the local type with a small body size of about 140-170 kg. They are mainly found in the mountainous areas and are kept as pack and riding animals.

(5) *Goats*: Goats are of the meat type and graze mainly in the hilly rocky mountain areas. Their development is limited. There is a clear need for a better integration of crop production, forestry and goat grazing.

(6) *Sheep*: The Phan Rang breed is the only sheep that survived in Vietnam. They belong to the meat type. The national flock is very small (about 1000 head) and is located in Ninh Thuan province. Phan Rang sheep must be considered a priority in the list of livestock genetic resources for conservation purposes.

(7) *Chicken*: The Ri is a very popular native breed; although small bodied it has a high egg yield and produces tasty meat. Several fighting chicken breeds are favourites with the farmers, as a hobby. The bigger size meat type breeds that still exist are the Mia, Ho and Dong Cao.

(8) *Duck*: The Co duck breed is predominant and is kept in scavenger systems; they look for their food in post harvested fields. This breed is popular due to its economic efficiency (feed conversion) and good laying capacities. The Bau duck is considered as meat type.

(9) *Cervus Nippon Deer*: These animals are in the process of domestication although they still bear some wild characters and are difficult to manage and control. This deer breed is not anymore endangered and is quickly spreading in the central north part of the country with the total herd being about 10,000 heads.

5.0 CONCLUSION

The endangering and even extinction of domestic animals in Vietnam comes mainly from serious commercial competition by exotic breeds. With the expanding of A.I. this process developed very quickly. The measures retained are the following:

- Select a limited number of local breeds to be considered a first priority. These must keep some economic value and be still in demand from farmers in a certain zone (such as marginal and difficult environments...). Attention must be given to the . “I” pig breed, some chicken breeds such as Mia, Ho, Dong Cao and the Phan sheep.
- The *in situ* method should be favorite for such animal genetic conservation. With the renovation of the country’s economy (moving towards a marketing system) we have to contract with household-farmers to keep the “genes” together by establishing nuclear breeding farms.
- Preliminary studies on deep frozen semen production as well as embryo transfer in buffalo and cattle have been conducted. These are considered as expensive means (*ex situ*) and are only under experimentation at this stage.
- Experiences and know-how from outside the country is needed and international cooperation should be considered. It involves the support in information means and updated methodology; training and also equipment needed for the *ex situ* methods and data processing practices.

LE MÉRINOS DE RAMBOUILLET

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RÉSUMÉ

Le Mérinos de Rambouillet, originaire d'Espagne, a été sélectionné à la Bergerie Nationale pour obtenir une excellente qualité de laine. Des reproducteurs ont été exportés dans le monde entier. Suite à la baisse des cours de la laine, la race a subi un déclin. Elle se limite actuellement à 200 têtes, toutes localisées à Rambouillet, avec un taux de consanguinité de 54 p. cent. Pour sauvegarder la race, des embryons ont été congelés et peuvent être réimplantés. Dans l'avenir, des descendants de reproducteurs exportés pendant les décennies précédentes pourraient être réintroduits afin de redonner de la vigueur à la race.

ABSTRACT

The Merino of Rambouillet originating from Spain, has been selected for two centuries in the "Bergerie Nationale" in order to obtain an excellent quality of wool. Pedigree sires have been exposed in the whole world. Following the fall of wool prices, the breed began to decline. Nowadays, there are only 200 animals bred in Rambouillet. To preserve the breed, embryos have recently been frozen, and could be reimplanted. In the future, some products from those pedigree sires that have been exported during the former decades, could also be reintroduced in the existing flock, to avoid the loss of vigour of the Rambouillet Merino.

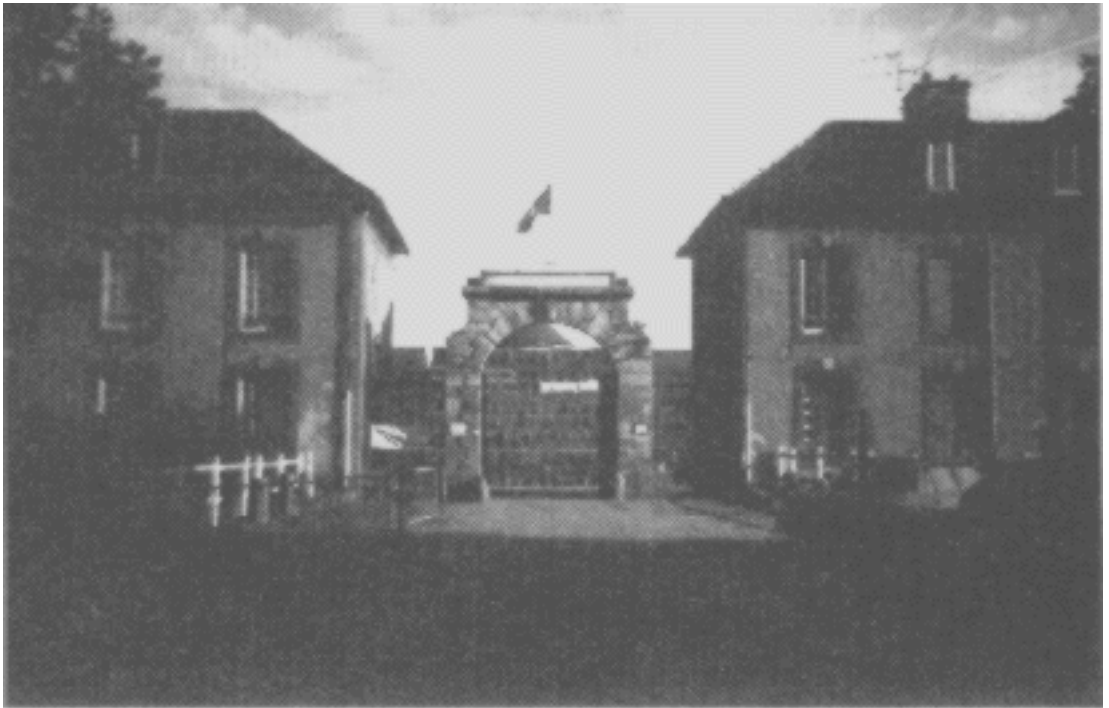
1.0 HISTORIQUE DE LA RACE

1.1 Origine du Mérinos et de la Bergerie Nationale

1.1.1 Rappels historiques

Face aux besoins qualitatifs et quantitatifs en laine de la France, plusieurs essais ont été menés à la fin du XVIIIème siècle pour introduire du sang mérinos en croisement avec les races locales. En 1786, 384 moutons de race Mérinos quittent la région de Ségovie en Espagne pour rejoindre Rambouillet où s'achève la construction de la bergerie royale. Ces animaux sont à l'origine de la race actuelle. Il n'y eut pas d'autre introduction, à l'exception de l'importation de 40 animaux en 1801, cependant avec peu d'influence sur le reste du troupeau en raison de leur qualité, très inférieure à celle de la première livraison. Sous le Ier Empire, la bergerie de Rambouillet, devenue impériale après avoir été nationale sous le Directoire et le Consulat, joue un rôle important, parallèlement à d'autres bergeries impériales, dans la fourniture de laine aux armées napoléoniennes et la diffusion de reproducteurs, aboutissant à une mérinisation quasi-complète du troupeau ovin français.

A la chute de l'Empire, la plupart des bergeries impériales ferment, à l'exception de Rambouillet. Pourtant l'élevage des animaux de race en général et du Mérinos en particulier commence à être prisé. Mais la laine très fine est trop onéreuse pour être utilisée seule, et à partir des années 1820, son prix baisse, développant la concurrence des races à viande en particulier anglaises.



L'entrée principale de la Bergerie Nationale de Rambouillet



Le colombier de Louis XVI



Cour de présentation des animaux de la Bergerie Nationale



L'allée principale

1.1.2 Formation de la race

La troupe des 367 moutons (compte-tenu de la mortalité) arrivés à Rambouillet en 1786 était constituée à partir de diverses souches espagnoles et formait un troupeau disparate avec des variations extérieures parfois spectaculaires, cependant sans rôle important sur la qualité des laines. La sévère sélection, basée sur la finesse de la laine ainsi que sur quelques données phénotypiques (cornes, couleur), s'est effectuée en consanguinité par croisements successifs, aboutissant à la race "Mérinos de Rambouillet".

1.2 L'épopée et le déclin du Mérinos (XIXème siècle, première moitié du XXème siècle)

La fin de l'empire marque l'apogée du Mérinos. La laine est bien valorisée à la vente, et des reproducteurs essaient de Rambouillet vers toute la France dans un premier temps, puis à partir du milieu du siècle vers les pays neufs (Australie, Nouvelle-Zélande, Afrique et Amérique du Sud sont les plus gros importateurs) ainsi que vers l'Europe de l'Est, l'Afrique du Nord,...

Mais à mesure que la diffusion des animaux à laine fine s'effectue sur une échelle de plus en plus importante, le prix de la laine ne cesse de décroître. En effet ce produit, étant donné sa facilité de transport, subit de plein fouet la concurrence des pays neufs qui bénéficient de grands espaces et de coûts de production bien moindres. En revanche la viande, difficile voire impossible à transporter à l'époque, dégage une valorisation intéressante, ce qui aboutit à une autre sélection et à l'introduction des races anglaises (Leicester/Dishley dans un premier temps, Southdown ensuite). Ce revirement entraîne le déclin du Mérinos au XXème siècle en France, ce qui ne signifie pas pour autant sa disparition: D'une part la plupart des races ovines françaises ont été mérinisées, d'autre part il se développe dans les pays neufs.

1.3 Le XXème siècle

L'activité de la Bergerie Nationale de Rambouillet reste la sélection et l'exportation de reproducteurs. Parallèlement se met en place, dès le milieu du XIXème siècle, une fonction de formation des bergers, qui deviendra assez importante après la guerre de 1914/1918, aboutissant en 1922 à l'ouverture officielle d'une école de bergers, dont la réputation deviendra grande.

Vers 1940, l'insémination artificielle y est expérimentée avec succès sur des ovins, contribuant à créer après la II^{de} guerre mondiale une école de formation des inséminateurs. Puis cette vocation de centre de formation spécialisé en élevage ne fait que s'accroître: Outre les activités précédentes s'ouvrent successivement une école d'aviculture et un centre équestre. L'établissement prend le nom de Centre d'Enseignement Zootechnique (C.E.Z.) en 1955 et ouvre en 1965 la première section de Brevet de Technicien Supérieur en Productions Animales. Il garde aussi le rôle de conserver le troupeau Mérinos de Rambouillet.

2.0 CARACTÉRISTIQUES DE LA RACE

2.1 Standard

La tête est courte, fine, les orbites peu saillantes. Le profil est légèrement busqué, avec souvent des plis au travers du nez. Les yeux sont vifs, à peine saillants, les oreilles courtes et horizontales. Seuls les mâles sont munis de cornes, enroulées régalièrement. Le cou est court, le fanon peu ou pas développé avec, chez les individus plissés, présence de plis dénommés cravates ou tabliers. Le squelette est fort, la poitrine ample et les côtes rondes. Le corps est cylindrique avec un dos horizontal, la croupe large. Les membres sont robustes, écartés, bien d'aplomb. La toison est très serrée et recouvre tout le corps. Les béliers mesurent 70-75 cm et pèsent 70 à 80 kg contre respectivement 60-65 cm et 45 à 60 kg pour les brebis.

2.2 Qualités lainières

La toison très serrée, sans jarre, est à mèches carrées, recouvrant tout le corps et représentant 8 à 10 p. cent du poids vif des animaux adultes (4 à 5 kg chez la brebis, 8 à 10 kg chez le bélier). La mèche de laine blanche est très ondulée, d'une longueur de 6-7 cm, d'une finesse moyenne de 110-120 (28-30 microns). Elle est homogène en longueur et en finesse, élastique et résistante. Le tassé moyen est de 5000 brins de laine par cm². Le rendement LAF est de 36 p. cent. Le Mérinos de Rambouillet constitue ainsi le prototype idéal du mouton à laine.

3.0 LE TROUPEAU ACTUEL

3.1 Situation et rôle

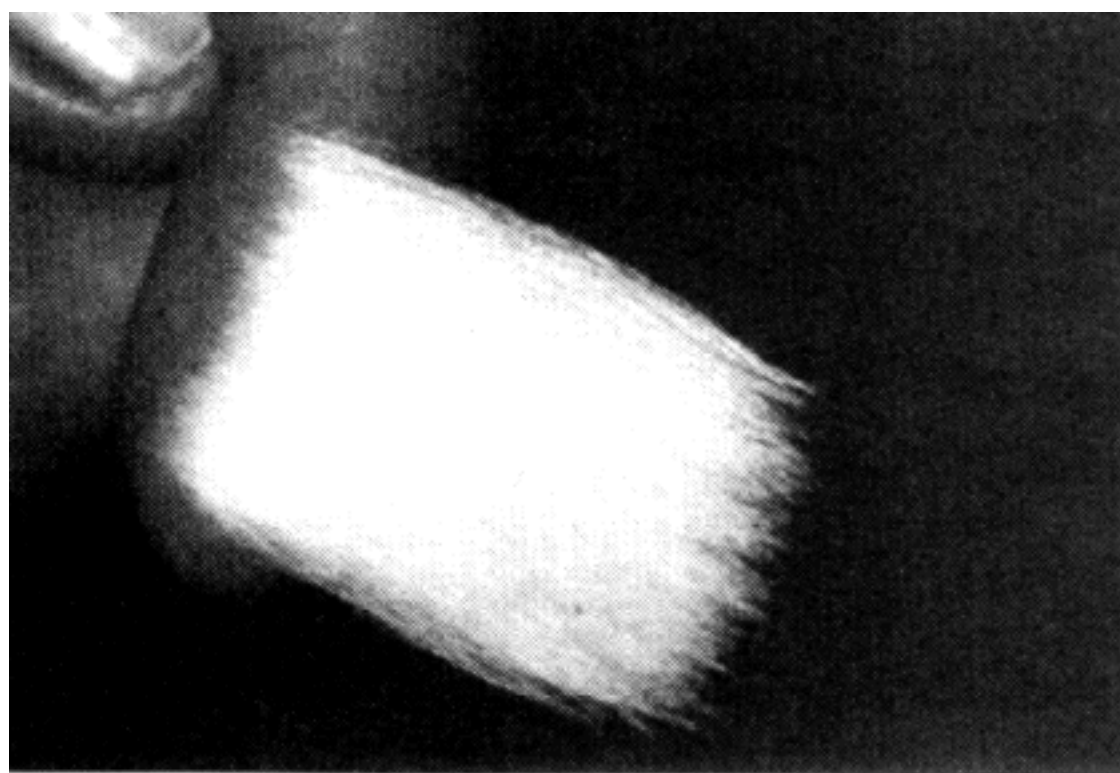
Actuellement, l'unique troupeau subsistant en France est celui de la Bergerie Nationale de Rambouillet, constitué de 130 brebis et 30 agnelles de renouvellement, et de 15 béliers adultes et de 30 mâles de renouvellement. Cependant, nous avons déjà signalé la diffusion mondiale de la race entre 1850 et 1930, notamment dans l'hémisphère Sud. D'autre part, il est à l'origine de diverses races dont les "Rambouillet" aux Etats-unis, "Sopravissana" en Italie, "Mérinos turc" en Turquie, "Mérinos stavisfol" en C.E.I., "Dubrovnik" en Yougoslavie.

Le troupeau rambolitain constitue un conservatoire de la race, réservoir de gènes particulièrement important pour la finesse de la laine et le désaisonnement.

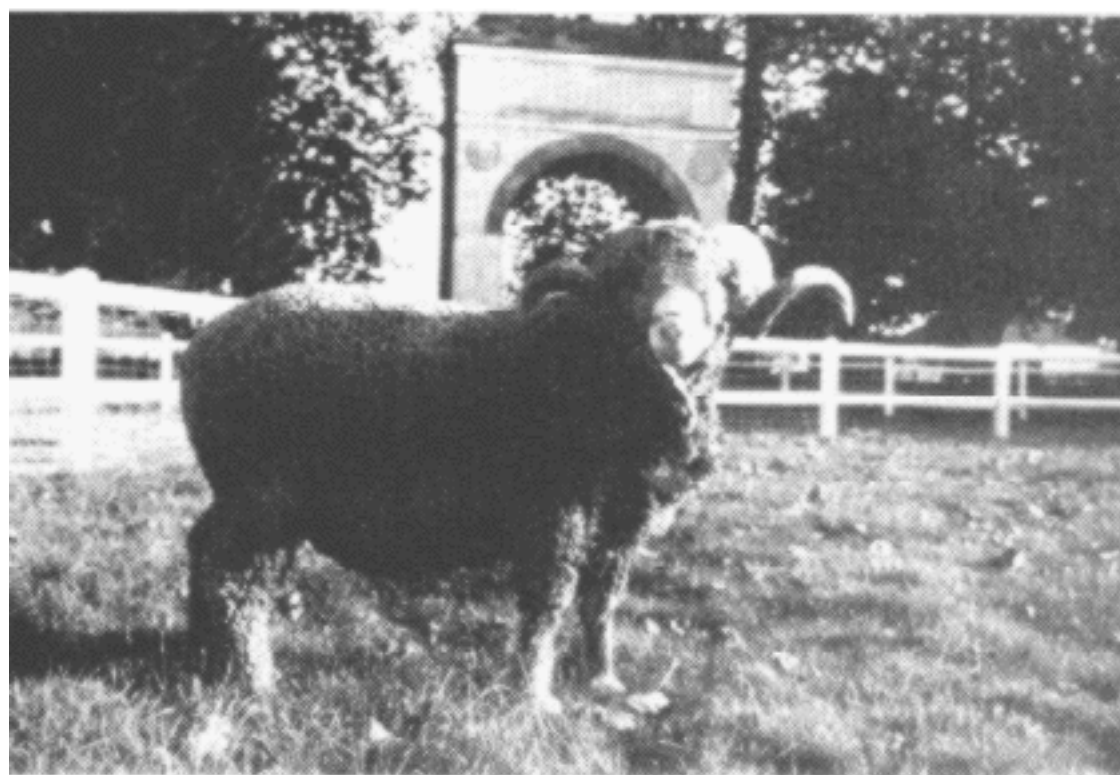
3.2 Conduite du troupeau

Les brebis sont mises en lutte une fois par an au mois de mai. Ce désaisonnement est l'une des grandes caractéristiques des races du groupe mérinos. Les agnelles nées à l'automne sont luttées également en mai, à l'âge de 18 mois.

Les performances de reproduction sont médiocres (128 p. cent de prolificité), ainsi que la valeur laitière des mères et la croissance des agneaux, la sélection ayant surtout porté sur les caractéristiques lainières. Les brebis utilisent les prairies naturelles du parc de Rambouillet l'été et des fourrages conservés l'hiver. Les mâles quant à eux ne sortent jamais, mais peuvent parfois être affouragés en vert si les disponibilités fourragères le permettent.



Un produit de choix



Le Mérinos de Rambouillet de nos jours



Le troupeau de Rambouillet

3.3 Reproduction et sélection

Les objectifs de sélection de la race sont maintenir les qualités lainières et éviter une consanguinité trop étroite. Pour ce faire, la connaissance des généalogies a permis de déterminer un plan d'accouplement pour la mise en lutte: L'élevage est divisé en 8 familles; un bélier et une brebis ne peuvent être accouplés que s'ils n'ont aucun ancêtre commun avant la quatrième génération (arrières grand-parents, cf. annexe).

Ainsi, les performances de reproduction sont comparables à celles connues il y a un siècle. En outre, les reproducteurs ont acquis une grande homogénéité de la toison et un fort caractère raceur. Après 200 ans de reproduction en circuit fermé, la consanguinité est devenue considérable: 54 p. cent.

L'I.N.R.A. (Jouy en Josas) produit annuellement à l'aide de l'outil informatique la généalogie de chaque reproducteur sur quatre générations, ce qui permet de déduire pour chaque bélier la liste des brebis possibles et pour chaque brebis la liste des béliers possibles. Le nombre de béliers possibles par brebis varie de 2 à 18, et le nombre de brebis possibles par bélier de 2 à 38. Le plan final d'accouplement est établi sur le critère finesse de la laine, en essayant toutefois de respecter un ratio équilibré de brebis par bélier (en particulier pour les reproducteurs n'ayant que peu de partenaires possibles). Ainsi par exemple le bélier 5116:

		père 0055
	père 8039	mère 1024
père 3413		père 8013
	mère 4071	mère 5086
Bélier 5116		père 5068
	père 7052	mère 9055
	mère 1011	père 5083
	mère 5078	mère 2019

Les brebis possibles pour ce bélier:

7038, 7045, 7049, 7063, 7067, 7084, 7085, 7087, 8014, 8018, 8032, 8040, 8044, 8046, 8051, 8059, 8066, 8074, 8076, 8080, 8099, 8109, 8118

Les brebis accouplées, in fine, avec ce bélier:

7038, 7063, 7085, 8032, 8080, 8066, 7087, 8109

4.0 MESURES DE CONSERVATION ET POLITIQUE D'AVENIR

4.1 Création d'une cryo-embryothèque

La faiblesse des effectifs, tous concentrés à Rambouillet, peut faire craindre le pire quant à l'existence future de la race. Le moindre accident (épidémie, incendie,...) entraînerait la disparition irréversible du Mérinos de Rambouillet. Pour remédier à ce risque, le C.E.Z. s'est lancé avec le concours du Ministère français de l'Agriculture et l'Institut National de la Recherche Agronomique de Tours dans un programme congélation d'embryons de Mérinos, utilisant en cela les compétences de son école d'insémination: Si le troupeau actuel venait à disparaître, il pourrait être recréé par implantation des embryons congelés sur des mères porteuses d'autres races ovines.

4.2 Voies d'avenir

Nous avons déjà signalé le très fort taux de consanguinité de la race, 54 p. cent , valeur qui peut quasiment apparaître aberrante. La race subit actuellement de graves conséquences de cette valeur extrême: manque de viabilité et déficience des agneaux, baisse de vigueur des béliers, difficulté des brebis à reconnaître et élever leurs jeunes ...,

Si cette situation devait empirer, il serait envisageable de réintroduire par de nouveaux reproducteurs du sang certes étranger, mais toujours à l'origine Mérinos de Rambouillet.

Certains troupeaux ovins australiens en particulier ont été constitué à partir d'animaux exportés par la Bergerie Nationale.

Ainsi, il serait possible de redonner de la vigueur à la race tout en conservant ses caractéristiques et son authenticité.

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AUTOCHTHONOUS SHEEP BREEDS IN HUNGARY

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SUMMARY

The authors give information on the phenotypic characteristics and production, the history and present state of three autochthonous Hungarian sheep breeds : the Racka, the Tsigai and the Cikta.

RÉSUMÉ

Les auteurs donnent des informations sur les caractères phénotypiques, la productivité, l'histoire et la situation actuelle de trois races autochtones hongroises : la Racka, la Tsigai et la Cikta.

1.0 INTRODUCTION

There are three sheep breeds involved in an official programme for maintaining local animal genetic resources in Hungary. Once these breeds - the Racka, Tsigai and Ciktawere represented by big populations but during the last two centuries they have gradually been replaced by more productive modern breeds, thus their numbers decreased to a very low level. In addition to the description of the breeds, their history and their present situation, the activities carried out in order to preserve their genetic variability and to find their place in today's agriculture are described in this note.

2.0 THE HUNGARIAN RACKA

The Racka is one of the breeds belonging to a group of populations living in eastern and central Europe, generally called Zackel type sheep. The Hungarian Racka, also referred to as Hortobagy Racka, is a unique member of the Zackel/Racka group. The breed is different from all the other populations : both males and females wear long, longitudinally twisted "V" shaped horns. Formerly the general scientific opinion was that this breed arrived in Hungary with the Hungarian conquerors in the 9th century (BOKONYI,1974; GAAL,1986; HANKO,1937; MATOLCSI,1975). Recent archeological findings proved the presence of the Racka in the 10th century, and new theories suggest an earlier development of this very particular "V" horned variety of the Racka group of breeds (BARTOSIEWITZ, in print).

The Hungarian Racka population had been the country's dominant breed until the 18th century, then began to decline rapidly in numbers because of the introduction and favouring of Merinos. Today there are about 2000 ewes kept in state and cooperative farms, in national parks and in farms belonging to hobby breeders.

Two colour types can be distinguished, the white (with light brown or rarely grey face and legs) and the black that is greying with age.

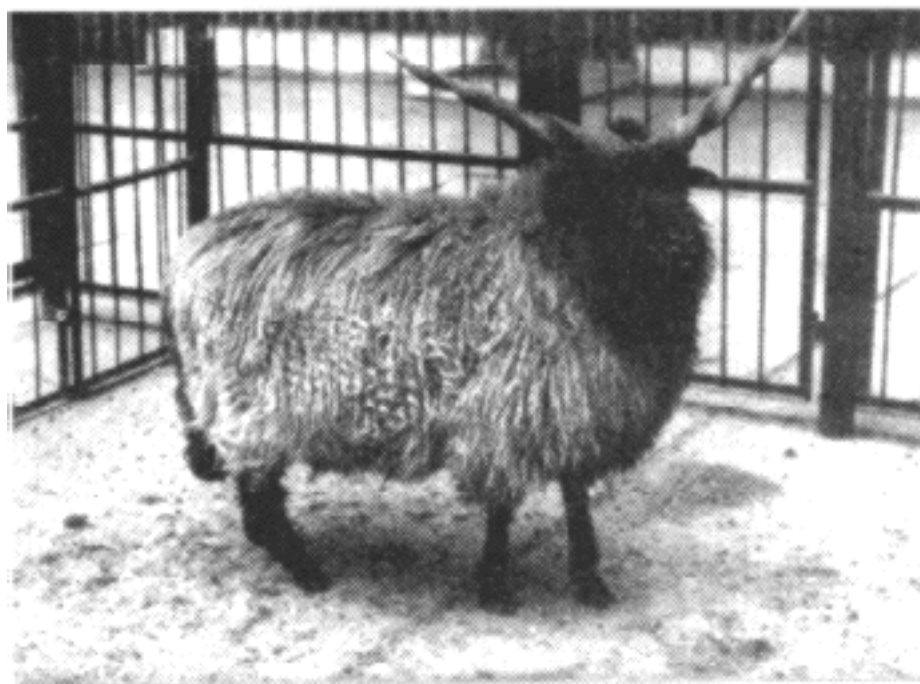
The head is of medium size, very lean and noble. The eyes are big, protruding and bright. The skull is quite wide, but the facial part gets narrow. The ewes' profile contour is straight and the head of the rams is also fine. The ears are of medium size, laterally protruding, but in some individuals smaller ears also occur. The carriage of the head is graceful, the neck is of medium length, not muscular, and arching from a low point, therefore the animal when on the alert can hold its head very high.

The withers and back are flat and deep. The rump frequently appears as overgrown. The bony frame is fine and extremely firm. The conformation of the legs is regular, their movement is light and well coordinated. The legs are long, the height of the knee joints (Bieler point) exceeds half the total height of the withers. The tail is fairly long, reaches down far below the hock.

In both males and females, the horns are long, twisted, and they protrude "V" shaped at an angle. Between the horns of female lambs and ewes there is a tuft of wool in the form of a forelock. The hoofs are very firm and not very susceptible to panaritium.

The body weight of shorn breeding adult ewes at the time of spring shearing, is 35 to 40 kg. Adult rams' weight is as much as 55 to 75 kg. Lambs, by the age of 30 days, weigh 7 to 10 kg, their body weight at the age of 50 to 60 days is 12 to 14 kg. By the time of slaughter, between October and December, they are likely to reach a body weight of 30 to 50 kg, their carcass weight is in the range of 40 to 42 percent (DUNKA,1992).

The breed grows fast and matures early. The rate of twinning is about 10 to 15 percent, there is a slight difference between the two colour types in this respect; the black ewes give birth to twin lambs more often than the white ones (DUNKA,1992). In the past the mutton of Hungarian Racka was highly appreciated on the markets of Europe. The place of fat deposition is abdominal and subcutaneous rather than intramuscular. It is reputed that Racka mutton has a higher nutritional value than that of the mutton sheep breeds or the Merinos but cannot meet the consumers' actual demand for more palatable lighter coloured meat.



The Racka

The Racka has mixed fleece i.e. both floss and over-hair occur in it. Lambs' coats are nicely curled but later, after the first shearing they lose their waviness. The diameters of fleece threads range between 18-45 μ , those of over-hairs are between 54-130 μ . The annual growth of coat staples may reach 30 cm and never tend to be shorter than 20 cm. The proportion of over-hair and floss is 66 : 34. Adult rams produce 3 to 4 kg and ewes 2 to 3 kg wool with a 50 to 60 percent yield (DUNKA,1992).

The purebred Racka was never selected for fur production. Because of this reason there are a lot of differences between and within flocks. Subjectively, the pattern of the black Racka fur is more beautiful and more homogenous, however the white variety is more valuable according to objective parameters (BODO *et al.*,1986). The fur of the black lambs is similar to that of the Karakul lambs but the ringlets are not so regular, they are smaller, more curly and less smooth. Nowadays the fur of Racka lambs is mostly produced at slaughtering after weaning and after the grazing period at 8 to 10 months of age, for making fur coats and blankets by the local handicraft industries.

The milk production of Racka is reasonable despite the fact that it has never been selected for this trait; approximately 40 liters milked per lactation.

According to recent data the owners of 1440 ewes get state financial support for each weaned lamb. The breeders' aim is to preserve the purebred population. Since 1984, The Hungarian Racka Sheep Breeders' Association maintains the two colour varieties by line breeding. The differentiation of lines is based on blood typing. The geographic isolation of some of the bigger units is of particular importance in order to avoid inbreeding (DUNKA and JAVOR,1991).

3.0 THE TSIGAI

This breed originates from Asia Minor. It was brought to the Carpathian region by Rumanian shepherds from the 13th century. It still has a relatively large population in the neighbouring countries, therefore Hungary preserves only a small stock. At present there are two flocks of 320 ewes kept in a cooperative farm and in a national park. They are maintained by state subsidies.

There are two colour varieties, black and white. The fleece of the white sheep can be greyish white because of the presence of black hair among the white ones. The black animals have black fleece that becomes paler on their back if exposed to sunlight, then they have a reddish appearance. The legs and the head are brownish or black. The ewes are generally hornless and there are often hornless rams as well.

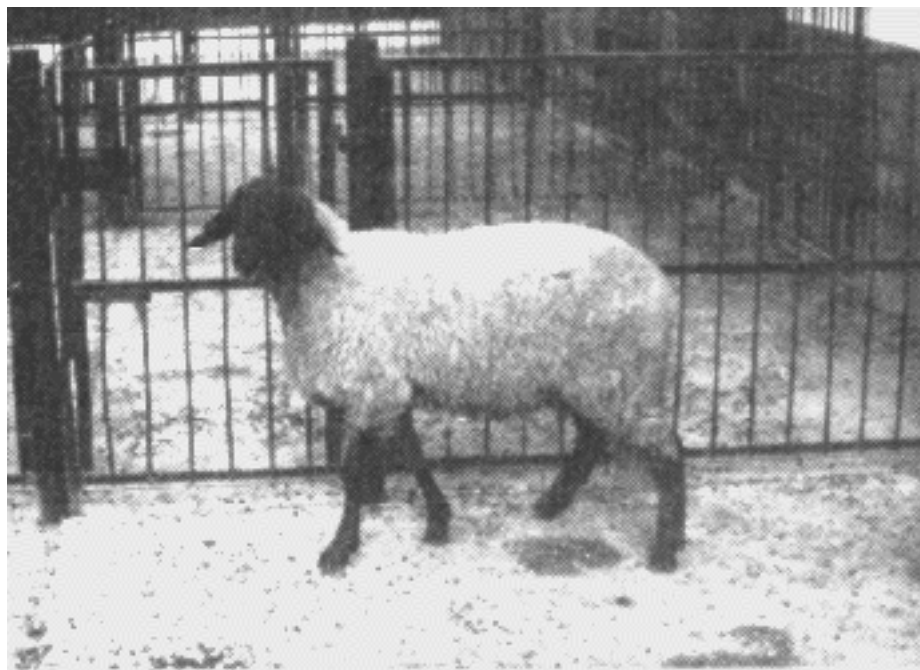
The live weight of ewes is about 40 kg and that of the rams is about 55 kg. The wool production of the breed is less than that of the Merinos. Their milk production could reach 50 to 60 liters per ewe and per lactation under good management conditions (SCHANDL,1955).

A recent study on the gene frequencies of the Tsigai blood polymorphic systems revealed no significant changes during the last 13 years. The observed and expected genotypes are close to each other. It means a genetic equilibrium, by which the maintenance of the breed and its genes is assured (FESLTS,1991).

4.0 THE CIKTA

This breed originates from the Zaupeel sheep of Bavaria and was brought to Hungary by German settlers in the 18th century. It was thought to be extinct in their country of origin, however a few years ago a small flock was found and the breed was reconstituted in Germany (SEIBOLD,1990). Since then genetic examinations proved the relationship of the German and Hungarian populations. The breed has never played an important role in Hungary. Today there are 300 ewes in a conservationist's private farm, who gets state support for the weaned lambs.

It is a white coarse-wooled sheep with bare face and legs. The live weight of ewes ranges from 25 to 45 kg. The staple length is 20 to 40 cm and the usual fibre diameter is 30-40 μ , but



The Tsigai



The Cikta

with extremes of 16-70 μ . The annual fleece weight of ewes is 1.5 to 2 kg with a yield of 65 to 70 percent (BODO,1985). The wool was formerly used for making handwoven materials.

Recent studies showed only slight changes in the frequencies of the Cikta blood polymorphic systems during the last 13 years. This is considered to be only temporary, and due to the breeder having favoured certain rams (FESLTS,1991).

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GOAT BREEDS IN ITALY

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SUMMARY

Italian autochthonous goats have been discriminated for centuries, first by laws which have limited their rearing, then because foreign breeds, such as Saanen and Alpine, were preferred. Recently, this trend changed and now the number of autochthonous goats is increasing. In Italy, the only goat which can be considered as being wild is the Capra di Montecristo. Among domesticated goats, the Vallese is classified as *Capra prisca*; the Maltese, the Rossa Mediterranea, the Garganica, the Orobica, the Frontalasca, the Verzaschese, the Sarda, the Argentata dell'Etna and the Locale are classified as *Capra hircus hircus* while the Girgentana is classified as *Capra hircus girgentana*.

Data have been published on the production and reproduction of each of these breeds, on the importance of the populations and on development trends; many reports exist on the rearing areas of these breeds.

RÉSUMÉ

Les chèvres autochtones italiennes ont été discriminées pendant des siècles, premièrement par des lois qui limitaient leur élevage et puis parce que on a préféré des races étrangères comme la Saanen et l'Alpine. Il y a quelques années que cette tendance est changée et le nombre des chèvres autochtones élevées est en train d'augmenter de plus en plus. En Italie, seulement la Capra di Montecristo appartient au groupe des chèvres sauvages. Parmi les chèvres domestiquées, la Vallese est classifiée comme *Capra prisca*, la Maltese, la Rossa Mediterranea, la Garganica, la Orobica, la Frontalasca, la Veraschese, la Sarda, l'Argentata dell'Etna et la Locale sont classifiées comme *Capra hircus hircus* tandis que la Girgentana est classifiée comme *Capra hircus girgentana*.

Pour chacune de ces races, les données concernant leur production et leur reproduction, l'importance des populations et leurs chances de se développer ont été publiées; de même, il existe des rapports sur les zones où elles sont élevées.

1.0 THE DEVELOPMENT TREND

During the last decade animal husbandry has undergone some important changes, mainly because of the effect of EC agricultural policy. In the sixties and seventies there has been a strong push towards milk and meat production; the eighties were characterized by overproduction of meat and cow's milk; in the nineties the interest is changing towards extensive production and product quality. In Italy the goat was traditionally found in extensive areas of the middle and upper mountains and because of its milk and cheese intrinsic quality, is being favoured by the new E.C. policy. In the last ten years livestock numbers increased by about 15% (Fig.1). Most important is the fact that the image of this species is changing: the previous attitude of discrimination and ostracism - represented in the thirties by laws limiting goat raising - has been abandoned and a new attitude of attention and interest favouring a regional legislation encouraging goat husbandry developed. A first tendency was that breeders preferred to import Saanens and Alpines from abroad because it was easier to find breeding males on the market and because of their higher milk potential. In recent years this trend attenuated because of the risk of introducing new diseases and because the total milk production of cheese, in terms of kilos, made per head of autochthonous breeds is more and more becoming similar to that of foreign breeds (CASU et al.1989a, PIZZILLO et al.,1992).

At present breed localization is as follows:

- In the North and in the Centre, the traditional system is based on a few numerous autochthonous breeds; in modern farm units almost exclusively Saanen and Alpine goats are raised.
- In the South ("Mezzogiorno") most farms raise autochthonous breeds, more or less specialized in milk production; Saanen and Alpine can only be found in Apulia.

Generally the trend is towards the use of autochthonous material, by the selection of breeds which are already sufficiently productive (Maltese, Rossa Mediterranea) and through the recovery of traditional dairy practices.

2.0 THE GENETIC RESOURCES

The goat was probably domesticated during the VIII millennium B.C. in Iran, Palestine and Syria and during the VII millennium B.C. it appeared in Europe, following the movement of populations looking for new cultivable lands. In Italy it was present in many places during the ancient Neolithic age (7.500-4.600 B.C.; WILKENS,1987). The present goat livestock situation is the result of a moderate differentiation, rapidly crystallized, of this population shift to the West; a shift which occurred through different waves without causing changes in the genetic composition (LAUVERGNE et al.,1988). As a consequence, contrary to what happened for sheep, the presence of "traditional populations" in Italy is still high. Nowadays, the origin of breeds and populations can be summarized according to ZEUNER's scheme (1963):

Wild goats:

Capra aegagrus hircus Linnæus. The only wild goat population in Italy can be found in the island of Montecristo.

Domesticated goats:

Capra prisca Adametz. According to MARCUZZI and VANNOZZI (1981) this group is made up of the Vallese goats, a small population bred on the Swiss border.

Capra hircus hircus Linnæus. Most domesticated goats are said to belong to this group: Maltese, Ionica, Rossa Mediterranea, Garganica, Orobica, Frontalasca, Verzaschese, Sarda, Ar entata dell Etna and the main other local populations (Locale).

Capra hircus gargentana Amshker. Within this group we can find the Girgentana, a characteristic breed with corkscrew-like horns.

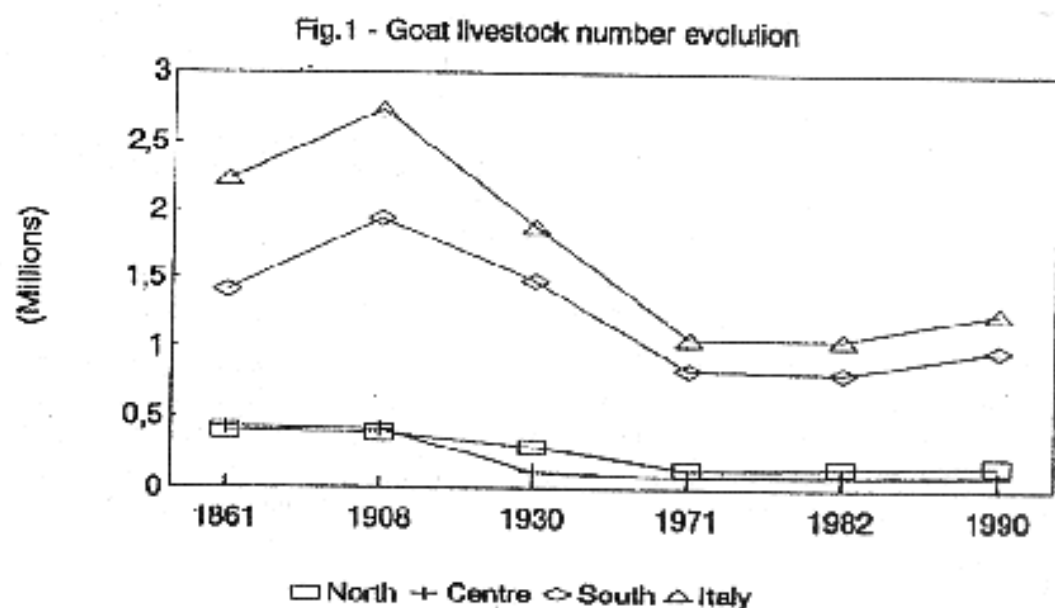


TABLE I PROLIFICACY, MILK PRODUCTION AND COMPOSITION

Breed	Milk (l) ($x \pm s.d.$)	Fat (%) ($x \pm s.d.$)	Protein (%) ($x \pm s.d.$)	Casein (%) ($x \pm s.d.$)	Proficiency (%)
Argentata dell'Etna	150 \pm 45 (1)				
Rossa Mediterranea	174 \pm 82 (2)	4.8 \pm 0.6 (2)	3.16 \pm 0.4 (2)	2.6 \pm 0.4 (3)	180
Garganica	134 \pm 50 (3)	5.4 \pm 1.1 (3)	3.8 \pm 0.5 (3)	2.7 \pm 0.5	140
Girgentana	435 \pm 169 (2)	4.7 (4)	4.2 (4)		190 (4)
Ionica	360 \pm 109 (2)	5.3 \pm 1.2 (3)	3.7 \pm 0.4 (3)	2.8 \pm 0.4 (3)	170 - 180
Locale	270 \pm 110 (5)	5.7 \pm 0.1 (5)	3.8 \pm 0.05 (5)		120 - 190
Maltese	357 \pm 172 (2)	3.8 \pm 0.8 (3)	3.3 \pm 0.6 (3)	2.6 \pm 0.4 (3)	180 (4)
Orobica o di Val Gerola	338 \pm 68 (2)	3 \pm 0.2 (2)	2.89 \pm 0.17 (2)		
Sarda	199 \pm 69 (2)	4.6 (6)	3.7 (6)	2.9 \pm 0.5 (7)	120 (8)

Source: (1) Portolano, 1979; (2) AIA, 1991; (3) Pizzilo et al., 1992; (4) Piras, 1986; (5) De Maria Ghionna, 1984; (6) Casu et al., 1989a; (7) Campus et al., 1983; (8) Casu et al., 1989b.

With the exception of the wild goat of Montecristo all other goats are milked and can be considered as dairy goats. Goats belonging to the group *Capra hircus hircus* have a different phenotype (specific husbandry systems, isolation in some areas, and little influence of one breed on another). To identify the groups within this background and allow for understanding the differences among populations we retained the following criteria:

- *hanging ear breeds*. They had their origin in the Mediterranean area and their ancestors are *Damascus* and *Nubian* goats. In this group we can classify the Maltese, Ionica, Rossa Mediterranea. They have the highest milk production and live weight and have always been raised in small flocks in sedentary systems;
- *goats linked to the pastoral system*. In the “Mezzogiorno”, most husbandry systems of the past were pastoral or transhumant and goats were raised together with sheep. They were not selected, quite light weighted and not very productive. Among these breeds we can find the Sarda, Garganica, and a very numerous population, phenotypically heterogeneous and often without a specific name which, for convenience purpose is called Locale;
- *isolated populations raised in restricted areas*. Mostly in Alpine valleys, known as Orobica (or Val di Garda), Frontalasca, Verzaschese. Their numbers are limited (4000 per breed) and their milk production is of importance.

During recent years, Saanen and Alpine have been introduced but there has been little crossbreeding between these two breeds and the autochthonous populations. Selection just started and 1% of population is being milk recorded.

Thus, in practice, almost the total goat population kept its original characteristics. They are the result of the combination of the original genetic components, of the climatic and environmental influences and of the husbandry systems.

The indicative productivity data of the various italian breeds are shown in table 1; table 2 shows their numbers and geographic distribution.



Mediterranean grazing (Sardinia)



Argentata dell'Etna



Frontalasca



Garganica

TABLE 2
BREEDS LIVESTOCK NUMBER AND DIFFUSION AREAS

Breed	Livestock number (2)	Diffusion areas	N° recorded goats (1)
Argentata dell'Etna	7,000	Sicilia	—
Rossa Mediterranea	56,000	Mezzogiorno d'Italia	253
Frisia o Frontalasca	2,000	Valtellina, Valchiavenna	—
Garganica	105,000	Puglia, Basilicata, Calabria, Campania	—
Girgentana	9,000	Sicilia, Campania	132
Ionica	19,000	Puglia	1,085
Locale	200,000	Mezzogiorno d'Italia	—
Maltese	50,000	Basilicata, Calabria, Sicilia, Campania	2,170
Orobica o di Val Gerola	2,500	Lombardia	723
Sarda	266,000	Sardegna	2,331
Capra di Montecristo	270	Isola di Montecristo	—
Vallese	4,000	Sondrio, Varese	—
Verzaschese	700	Varese	—

Source: (1) AIA, 1991

(2) ASSONAPA, 1992



Girgentana

3.0 THE “BREEDS”

3.1 Argentata dell’Etna

It is a population of about 7,000 head mainly raised in the Eastern area of Sicily (PORTOLANO,1979). Its name comes from the colour of its mantle which is grey with silvery reflections; its ears are hanging and it is occasionally hornless. It is very appreciated by breeders as it is a hardy animal, using well the scarce pastures of Sicily and has a good milk production (200-300l).

3.2 Capra di Montecristo

The only wild goat in Italy can be found in the Montecristo island. SPAGNESI et al. (1986) estimated that, on a surface of 1000 ha, about 270 goats are living; it is a quite high livestock number which can endanger the animal/ilex plants ratio. Males reach a weight of 30-40 kilos while female weight is up to 20 kilos. Prolificity is a bit higher than 100%. The feeding of Montecristo goats reflects well the floral composition of the island. The main species which compose the intake are heathers. Coat colour is variable, ranging from a type similar to the Wild Goat of Crete to black; all together 7 kinds of coats have been identified (SPAGNESI et al.,1986).

This goat represents a very interesting natural patrimony from the scientific and faunistic point of view. It is protected and its evolution is being studied.

3.3 Frisia or Frontalasca

In spite of the big ethnical heterogeneity, typical of mountain farms, in the Valtellina there is a goat population which has been able to keep its genetic homogeneity because of the isolation of the valleys in that region.

Frisia goat is also called Frontalasca because it comes from Frontale (Alta Valtellina) and probably derives from the Swiss breed Striata. At present the population amounts to 6,000 head, distributed in 307 flocks with an average number of 20 head. During winter the flocks live indoor and eat hay but rarely concentrate; in spring the flocks graze in the vicinity of the farms (ASSONAPA,1992). The size of the animals is big, females weigh about 60 kg and males about 90; typically, their coat is black with two characteristic white stripes on the sides of the head, abdomen and limbs; the horns, when present, are well developed and of the markar type.

3.4 Garganica

Its name comes from the Garganopromontory but it is spread all throughout the Southern Appennine. It is black, with long hair, a very hardy and gregarious animal; therefore, it is difficult to rear it together with other species or goat breeds. It is generally raised freely on the range in the woods or on common pastures, in flocks consisting only of goats with more than 150 head. About 100,000 head are raised, milk production

and prolificity are quite low (130l and 40%) because the flock always consists of animals chosen not for their milk production but on the basis of their rusticity and adaptation to difficult environmental conditions (i.e., goats with one kid only or with small udder to avoid damage while grazing in brambles or bushes). Fat and protein contents are, on the contrary, high.

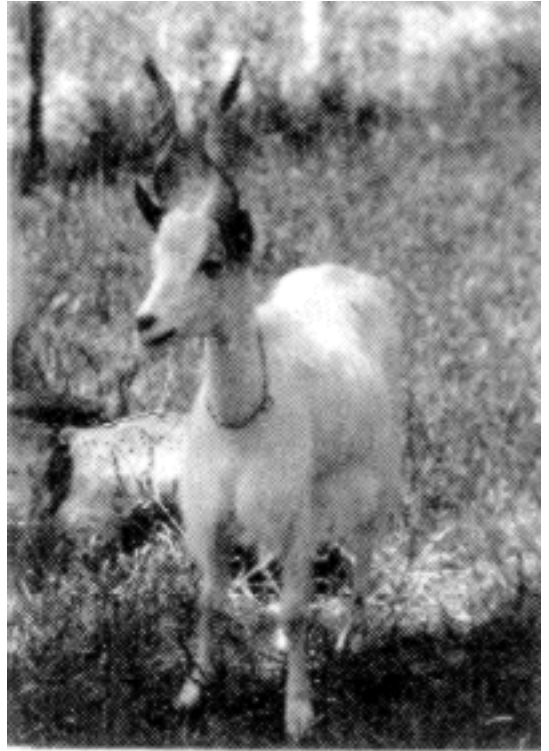
3.5 Girgentana

Widely spread in Sicily, during the last years an important reduction of its population was observed; in 1958 there were about 37,000 head (PINO and PORTOLANO,1960), while at present no more than 5,000 head are reared, mainly in the province of Agrigento and also in the provinces of Potenza and Salerno. The flocks are quite small (15-20 heads) and the feeding system is characterized by the utilization of pastures together with consumption of concentrate. Milk

production is high as well as the fat and protein contents. Prolificity is high, too. The Girgentana goat is a very interesting animal but its reduced number, the competition by more numerous goats with the same productivity (Maltese and Rossa Mediterranea) and the attractiveness inspired by its appearance (corkscrew horns) will make of it a hobby animal.

3.6 Ionica

This goat is similar to the Maltese, with hanging ears, but the difference is that the Ionica has no black spots on its head or on the distal part of its limbs and has a higher live weight. It is almost exclusively raised in the Southern area of Apulia where it can be found in intensive agricultural systems, the byproducts of which (horticulture, pruning of grapes and olive trees) are an important component in the feeding of this goat, above all during summer. In winter, it grazes on wheat and barley crops and rarely on meadows. Milk production, fat and protein contents are high. Its population is, however, quite limited: about 20,000 head of which a bit more than 1,000 are registered in the herd book.



Girgentana

3.7 Locale

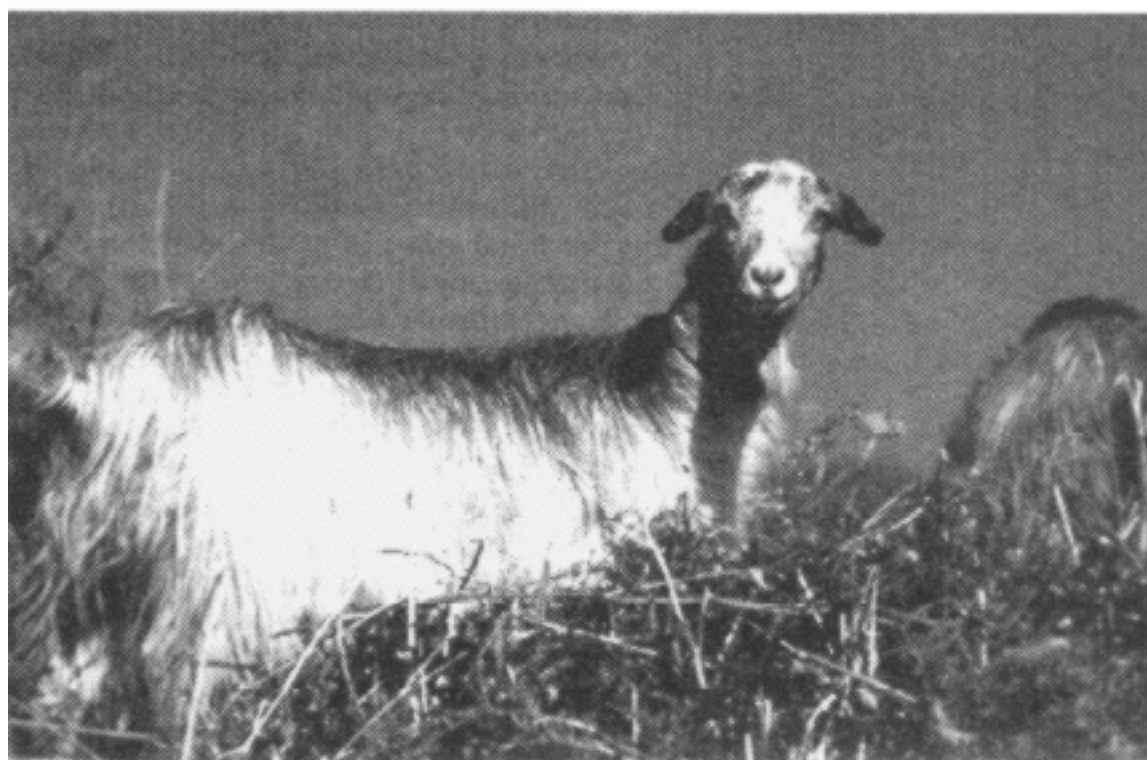
The name “Locale” is given to a heterogeneous population, which can be found throughout the whole continental “Mezzogiorno” and above all in the mountainous area of Southern Appennine. It cannot be classified under any of the standardized breeds. Very often it has not got any name, however it has a remarkable economic importance. It is very difficult to estimate the number of head; but probably, in Italy, there are about 1,200,000 goats of which about half are represented by well defined breeds; so one can estimate that the number of local goats is more than the 200,000. It is a very heterogeneous population. From the ethnographic and ethnologic point of view, the influence of both foreign breeds (Saanen, Alpine, Toggenburg) and of the autochthonous ones (Maltese, Garganica, Rossa Mediterranea) is clear. Husbandry systems also show the heterogeneity of the territory: in the high mountains there are the very hardy local goats which use free range collective pastures and are not very productive while, going down to the valleys, productivity increases because husbandry becomes more and more a permanent practice (RUBINO et al., 1983). Milk production varies a lot, ranging from 100 l in mountain flocks up to 400 l in the lowland; the same variability can be observed in prolificity. Fat and protein contents are high.

3.8 Maltese

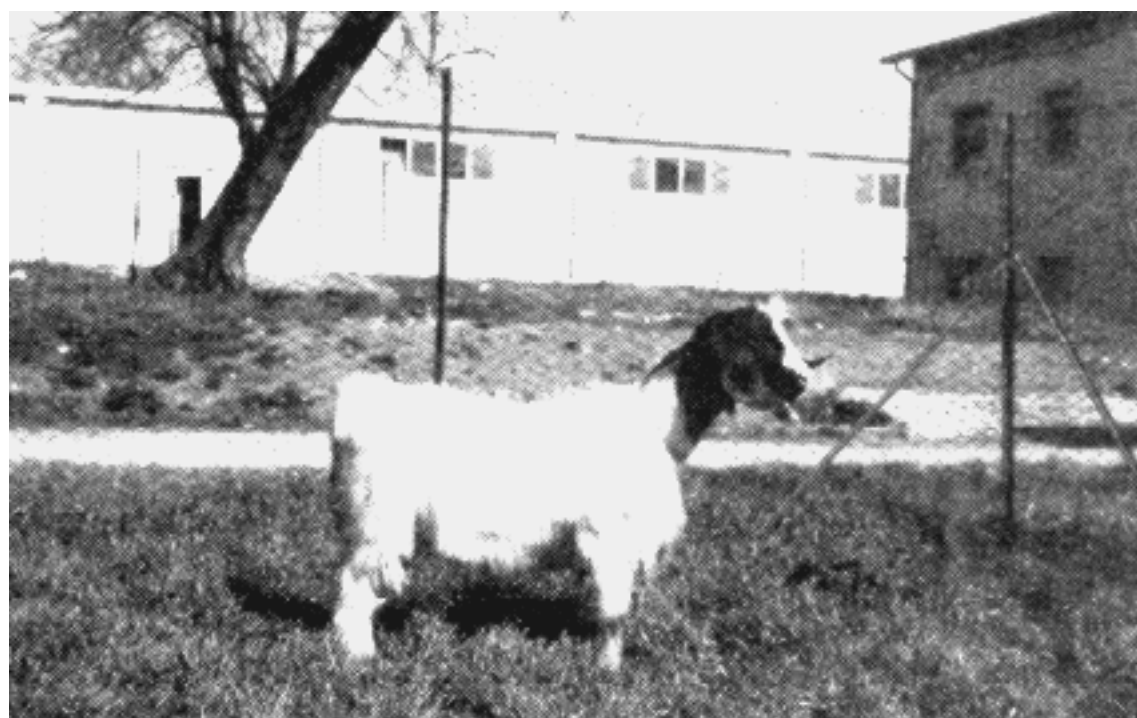
Originally this breed came from the Middle East and spread first in Sicily; during recent years it spread also in the continental “Mezzogiorno”. It is the Italian dairy goat par excellence and it is the favourite breed of new entrepreneurs or of those who want to replace their breeds with more productive ones. In Sicily, it is raised in small flocks (40-60 goats) in permanent systems which also use native pastures, cereal crops and horticulture by-products. On the continent it can be found in quite big flocks, 200-400 head, milking is often mechanical, feeding is based



Ionica



Locale



Maltese



Rossa Mediterranea

on meadows, grazing hay and concentrate. Kidding occurs during the whole year, with a concentration during the months of November and February. Milk production is about 350 l with a high fat (3.8%) and protein (3.3%) contents. Prolificity is also high (180%). This breed accounts for about 50,000 head but only 2,000 of them are registered in the herd book.

3.9 Orobica or della Val Gerola

This breed originated from the Gerola valley and can be found in several valleys in the provinces of Como and Bergamo. Its size is medium, its coat can be uniform or patched, with shades from grey to black; its horns, in particular those of males, are characteristic, i.e.: long with a flat section. It is a hardy animal which feeds on shrubs and alpine pastures. It is raised in small farms, in general together with cattle or sheep. There are about 4000 head in Italy. Milk production is important (over 300 l) while fat and protein contents are quite low. Probably, a cross with Alpine or Saanen goats occurred in the past (CAMOZZINI et al., 1991).

3.10 Rossa Mediterranea

Throughout the "Mezzogiorno" and above all in Sicily there is a population which is quite homogeneous for its coat colour (tawny) and for its hanging ears; this breed was also called *Derivata di Siria* because it is similar to the Damascus goat. In 1991 the Herd Book Association decided to call it *Rossa Mediterranea* to include under this name all tawny-coloured goats of this type. This goat gives an important milk production (about 300 l) with high fat (4.8%) and protein (3.2%) contents. Prolificity is about 180%.

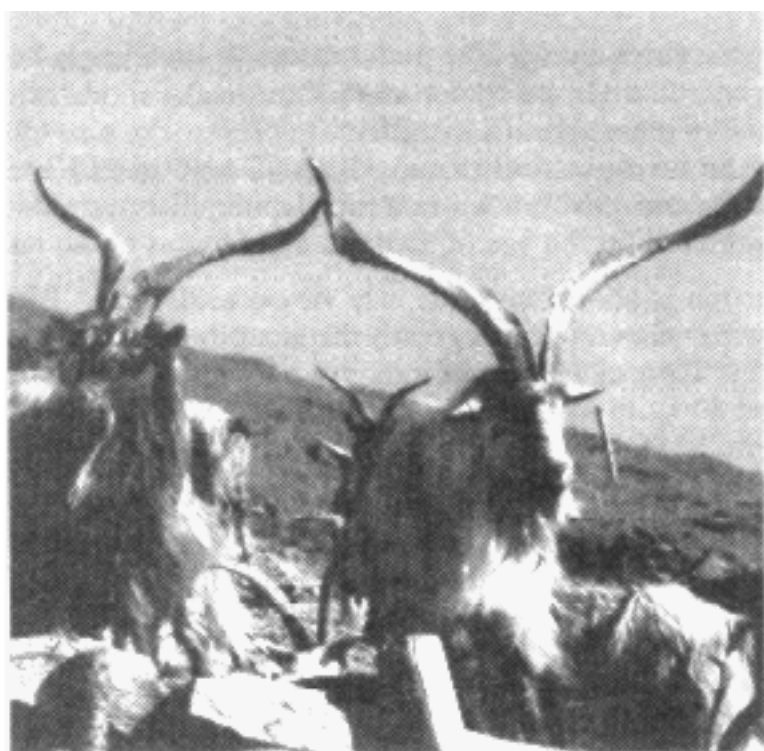
Husbandry systems vary according to the geographic area. In the high mountains, there are flocks with more than 100 head, composed in general only of goats, they utilize common pastures and receive concentrate only during kidding periods. In the lowland, there are flocks raised together with sheep; they use meadows and receive concentrate. There are also more intensive farms, with more than 200 head and with machine milking. The population is about 50,000 head and tends to increase since breeders prefer this goat for its rusticity and productive potential.

3.11 Sarda

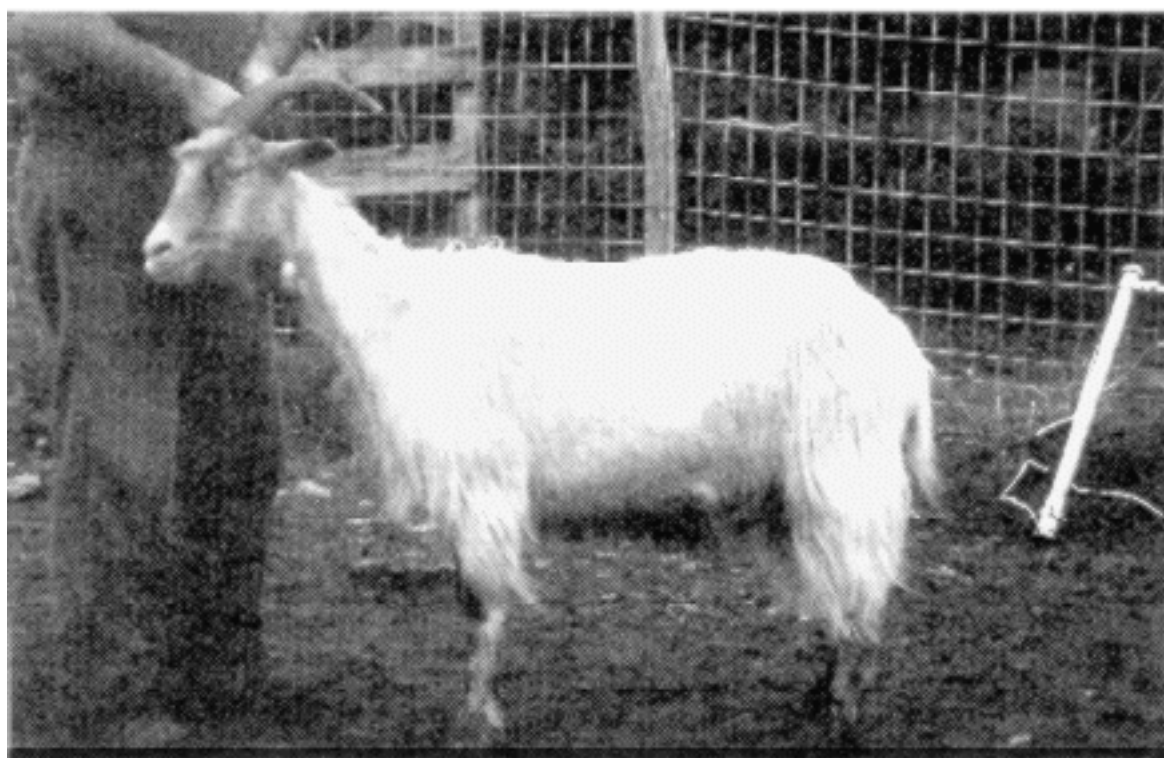
The Sarda goat lives only in Sardinia, where 266,000 head are raised, that is 22 % of the national goat population, with an average of more than 10 head per square km. The main rearing pattern is free ranging, with animals living outdoor during the whole year without shelters. Population concentration is higher in mountainous areas where there is a sporadic form of transhumance; in the plains extensive breeding is beginning to spread. Feeding is mainly based on the utilization of mediterranean shrubs while autumn-winter herbage is only used in plain areas (BRANDANO, 1979). The size of flocks varies from 77 to 400 head with an average of 190 animals (BRANDANO and PIRAS, 1978). Kiddings are concentrated at the end of November or during January/February. Milking period starts when kids are slaughtered (at the age of 30 days) and finishes at the end of summer.

Milk production is about 200 l but may vary considerably. BRANDANO (1979) noticed that the environment influences greatly the quantity of milk produced: goats having had more than one kid produce 232 kg of milk in a period of 180 days on the coast, 162 kg in the lowlands and 89 kg in mountainous areas. Even if milk production is low, fat and protein contents are high; these traits are sensibly reflected in the organoleptic and rheologic characteristics of cheeses (CASU et al., 1989a).

The Sarda breed is the most interesting one among the autochthonous populations both for its importance and because it kept its original characteristics almost intact. BRANCA and CASU (1988) showed the absence of genetic erosion even if in the past an attempt of pastoral standardization towards a long hair type, to obtain a coarse textile material, was made.



Orobica



Sarda

3.12 Vallese

Imported from Switzerland during the thirties, the Vallese is a small breed spread in the valleys of the provinces of Sondrio and Varese, on the Swiss border. It is a medium-big size breed; females weight more than 50 kg and males 80 kg; their coat is white, with black head, neck, withers and limbs.

The Vallese can be considered a dual purpose breed because kids have a weight at birth of almost 5 kg and a high live weight gain; milk production is about 150 l. It is called the glaciers' goat for its rusticity and for its ability to live in the most inaccessible areas. About 4,000 goats are recorded in the Herd Book in Switzerland.

3.13 Verzaschese

This population comes from the Val Verzasca (Switzerland) and is above all spread in the province of Varese. It is a tall breed, kids weigh at birth more than 5 kg and have good live weight gain; for this reason it is considered a meat breed. It wears horns and its coat is completely black with quite long hair. At present there are about 700 head distributed in 25 farms (ASSONAPA,1992).

4.0 CONCLUSION

The demand for well defined quality goat cheese is increasing, stimulating breeders towards an increase in milk production and an individualization of breeds the milk of which has a high dairy yield. Italy has many autochthonous populations because of the geographic and regional territorial/political isolation which has characterized the peninsula during many centuries. No selection has been practiced on these populations which are suitable for extensive husbandry systems and are able to utilize well local grazing. They have a high milk production and their yield is rich in fat and proteins. The extensive type of feeding system and the high dry matter content in milk gives cheeses with a good flavour; however, their production is not very homogeneous. It is possible to produce typical cheeses, the characteristics of which vary from an area to another. Since the new EC policy tends towards privileging extensive husbandry systems and the higher intrinsic quality of animal products, these populations have all the characteristics to play a major role in the new development process, otherwise, there would be a danger of abandonment.

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“PUNGANUR” - THE MINIATURE *Bos indicus* CATTLE

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SUMMARY

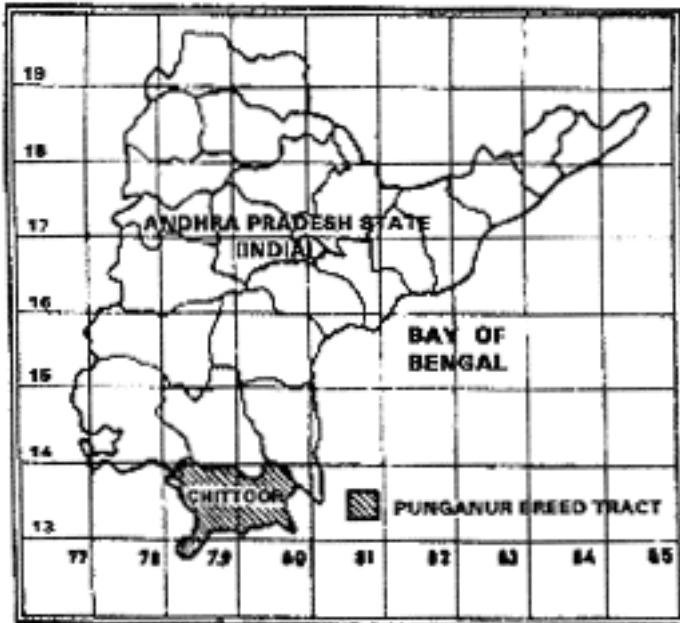
The author describes the Punganur dwarflike *Bos indicus* breed of the Southern tip of the Indian state of Andhra Pradesh. An attempt to rescue the breed in the 1950's was not successful; this cattle are now faced with extinction.

RESUMÉ

L'auteur décrit la race naine *Bos indicus* Punganur de la pointe sud de l'état indien d'Andhra Pradesh. Une vaine tentative de sauvetage de cette race fut faite pendant les années 1950. Ces bovins sont maintenant menacés d'extinction.

1.0 INTRODUCTION

The Indian subcontinent is a treasure house of the *Bos indicus* cattle. The larger breeds weigh over one metric ton and the smallest breed that weighs about 140 kgs. The “PUNGANUR” cattle are the smallest of the *Bos indicus* breeds.



2.0 THE BREED

This breed of cattle are bred in the Chittoor district of Andhra Pradesh state in South-eastern India. In Chittoor district the breed tract is confined to the taluks of Vayalpad, Madanaspalli and Palamaneru. The development of these cattle was associated with the “RAJAHS OF PUNGAMIR”, hence this breed is known as “Punganur”.

The soil of the region of origin is very light and deficient in calcium. The rainfall is also low, this area is thus sometimes subject to drought. It is under these harsh conditions that this breed developed with minimal care and shelter.

These are very small cattle, perhaps the smallest of the cattle breeds. The average height being between 60 to 100 cm, and weighing around 130 to 200 kgs. The colour varies from grey to red, brown and black. The cows are excitable, nervous and difficult with strangers. Their udders are well shaped, with symmetrical teats. They are fair milkers and were known as the *poor man's cow*. Their milk yield is around 2000 lbs in a lactation of ten months, with 4% fat.

The bulls are more docile than the females and weigh about 230 lbs. The males have a prominent forehead, with grey colour on the neck and hump, and are tight sheathed. The legs are well set, with hard, compact hoofs and help them in grazing on the slopes of the hillocks in the area. This breed in view of its very small size and diminished utility is almost extinct, with only a few of them left.

An attempt was made in the mid 1950's to rescue this breed from extinction. A herd of Punganur cattle was put together and bred at the Government Livestock Farm at Palamanery in Chittoor district. But due to lack of utility for these cattle the herd was dispersed.

From the genetic point of view the Punganurs are a pure homozygous bantam cattle and should prove valuable for future breeding work. But as things stand today it is a very difficult task to revive this almost extinct breed.



Pungunur cattle

STATEMENT OF PARTICULARS OF PUNGANUR CATTLE AT THE GOVERNMENT LIVESTOCK FARM, PALMANER

	Date of Birth	Weight	Length	Height	Girth	Length of Shin Bone	Length of Tail	
Below 6 Months Males	16-02-1956	102 lb.	2'-2"	2'-2"	2'-9"	3½"	2'-8"	
	14-02-1956	115 ..	2'-4"	2'-5½"	2'-10½"	4"	1'-8"	
Females	12-05-1956	60 ..	2'-10"	2'-1"	2'-5"	4.3/4"	1'-3½"	
	08-02-1956	100 ..	2'-2"	2'-7"	2'-8"	4"	1'-9"	
	06-04-1956	105 ..	2'-4"	2'-3"	2'-9"	3½"	1'-8"	
	01-04-1956	102 ..	2'-3"	2'-1"	2'-8"	3"	1'-7"	
	(Approx)							
6 Months to 1 Year Males	09-07-1955	195 ..	3'-2"	2'-5½"	3'-9½"	4"	2'-9"	
	23-09-1956	152 ..	2'-8"	2'-9½"	3'-8½"	4"	2'-1½"	
Females	29-11-1955	183 ..	2'-5"	2'-5½"	3'-5½"	3.3/4"	2'-2"	
	03-01-1956	160 ..	2'-5"	2'-8"	3'-3"	4"	1'-11"	
	01-10-1955	237 ..	3'	2'-11"	3'-8½"	5"	2'-2"	
	09-09-1955	120 ..	2'-4"	2'-8"	3'	4"	1'-11"	
	(Approx)							
1-2 Years Males	27-02-1955	323 ..	3'-9"	3'-2"	4'-1½"	5"	2'-6"	
	26-03-1956	355 ..	3'-1"	3'	4'-4½"	5"	2'-10½"	
	(Approx)							
Females	26-03-1956	392 ..	3'-4"	2'-11"	4'-4"	4"	2'-10"	
	12-06-1955	196 ..	2'-4"	2'-4½"	3'-4½"	3½"	2'-1½"	
	06-06-1955	254 ..	3'	2'-11"	3'-11"	5"	2'-8"	
	26-03-1955	320 ..	3'	4'	4'-½"	6"	3'-2"	
	(Approx)							
2-3 Years Females	No.12	2½ Years	400 ..	3'-6"	3'-1"	4'-6½"	6"	3'-½"
3-4 Years Females	47	4 teeth	272 ..	3'-3"	3'-2"	3'-10"	5"	2'-8"
	13	4 teeth	288 ..	2'-7"	2'-9"	4'-½"	4"	2'-9"
4-5 Years Males	10	5 teeth	450 ..	3'-9½"	2'-9"	4'-6"	4"	3'-4"
	3	6 teeth	598 ..	3'-6"	3'-4"	5'	5"	3'-4"
Females	K21	6 teeth	338 ..	3'-3"	3'-2"	4'-4"	5"	2'-11"
	K31	6 teeth	270 ..	3'	2'-11"	3'-9½"	5"	2'-11"
	50	6 teeth	272 ..	3'-2"	2'-11"	4'-2"	4"	2'-7"
5 Years & above Males	1	8 teeth	480 ..	2'-11"	3'	4'-9"	4'	3'-1"
Females	2	8 teeth	640 ..	3'-3"	3'-2"	5'-1"	4"	2'-11½"
	K27	8 teeth	392 ..	3'-2½"	2'-10"	4'-4"	4½"	2'-9"
	K28	8 teeth	312 ..	3'-2"	2'-10½"	4'	4"	2'-11"

MORTALITY PATTERNS IN GIR CROSSES

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Maharashtra, INDIA

SUMMARY

In this short note a comparison is made between the Gir and its dairy crosses (Holstein Friesian, Jersey, Brown Swiss), with special reference to mortality of the females, up to the age of two years. Crossbreeding the Gir resulted in higher mortality rates that decreased with age.

RÉSUMÉ

Cette communication brève compare le Gir avec ses croisements laitiers (Holstein Frisonne, Jersey, Tachetée Brune Suisse) en tenant particulièrement compte de la mortalité des femelles jusqu'à l'âge de deux ans. Le croisement du Gir a donné lieu à une augmentation du taux de mortalité qui diminue avec l'âge.

1.0 INTRODUCTION

The present investigation was undertaken to study the mortality, up to the age of 2 years, in the female population of halfbreds, triple crosses and interbreds of Gir (G) with Holstein-Friesian (F), Jersey (J) and Brown Swiss (B) at the Research-Cum-Development Project on Cattle, Mahatma Phule Agril. University, Rahuri, Distr. Ahmednagar, Maharashtra.

2.0 MATERIAL AND METHODS

The data on the mortality of the female calves for the period from 1972 to 1990 were collected and analysed. The calves were classed in nine groups: Holstein x Gir (FG) and Jersey x Gir (JG) halfbreds; interbreds of FG (IFG); triple crosses viz 50% Holstein-Friesian 25 % Jersey 25 % Gir (JFG) and interbreds of JFG (IJFG); 50 % Brown Swiss 25% Holstein-Friesian 25 % Gir (BFG) and interbreds of BFG (IBFG).

All the calves were born through artificial insemination. Calvings occurred all throughout the year. The calves were weaned at birth. They were fed separately by hand. Bucket feeding of colostrum from their respective mother(s) for (the) first 3 days and whole milk thereafter up to 3 months of age was fed individually as routine practice. Concentrate mixture (calf meal), mineral supplements and good quality roughages were given after 1 month of age. The calves were housed in individual calf pens up to 3 month of age and thereafter in loose housing with partial shelter.

Mortality rate (%) was calculated by the following formula suggested by SHARMA and JAIN (1976)

$$M.R = \frac{d_i}{b - (d_i - 1)} \times 100$$

Where d_i number of animals died in the i th age group
 b total number of calves born
 d_i-1 number of deaths up to previous age group.

The mortality rates were calculated for the following age groups :

- | | | | |
|-------------------|------------------|-------------------|-----------------|
| 1) Birth -1 month | 2) 1- 2 months | 3) 2 - 3 month | 4) 3 - 6 months |
| 5) 6 -12 months | 6) 12 -18 months | 7) 18 - 24 months | |

The differences among genetic groups and age groups were studied by the analysis of variance technique after transforming the mortality rates (expressed as percent) into angular measures.

3.0 RESULTS

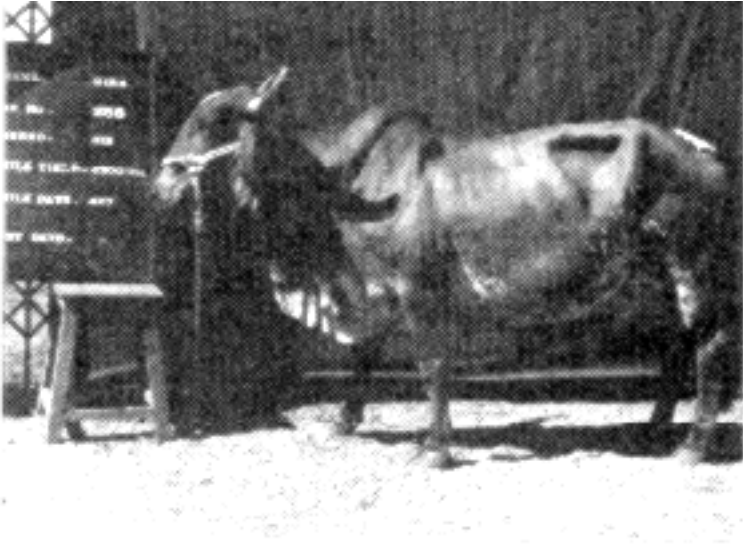
The mortality rate (%) in different genetic groups and different age groups along with number of births is presented in Table 1. The analysis of variance is presented in Table 2.

3.1 Genetic group

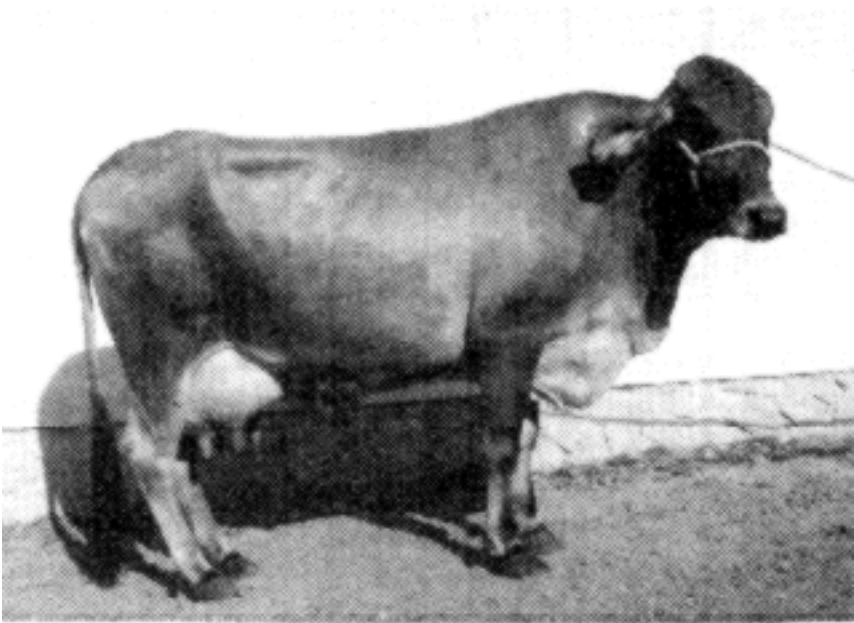
The difference in mortality rate among different genetic groups was highly significant ($P < 0.01$). Generally, the mortality rate increased with increase in the exotic inheritance. The mortality rate was higher in triple crosses than halfbreds. SEN et al. (1953), DONALD (1963), SRIVASTVA et al. (1973) and SHARMA and JAIN (1982) recorded higher mortality in 3-breed crosses whereas BUVANENDRAN (1977) observed lower mortality. In halfbreds higher mortality was observed in JG than FG, while in triple crosses high mortality was noticed in BFG followed by JFG and FJG. An incidence of mortality was higher in interbreds than their original crosses in halfbreds and triple crosses. The mortality rate was less in the FG (5.14%) and FJG (7.33%) genetic groups than the other Gir crosses. The highest mortality rate was noticed in the interbreds of

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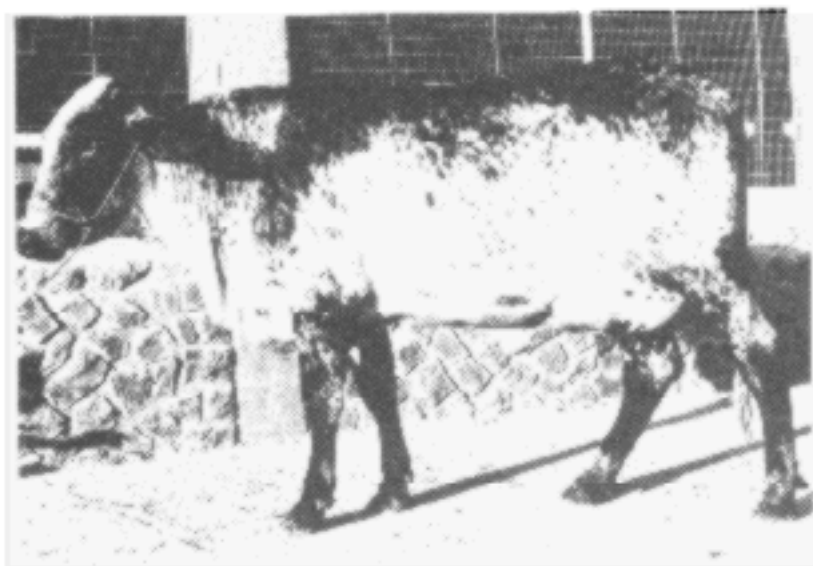
Gir



Jersey x Gir



Brown Swiss x Gir



Holstein x Gir

BFG group. The present findings were consistent with the findings reported by KULKARNI et al. (1989).

3.2 Age group

The differences in mortality rate in different age groups were highly significant ($P < 0.01$). The mortality rate decreased with the increase in age up to 18 months of age. There were more deaths in the first month age group (9.53%). It was gradually reduced up to the age of 24 months. There were no deaths in some genetic groups after the second month of age. The decrease in mortality rates with the advancement in age is in agreement with the findings of ORMISTON (1949), ASKER and EL-ITRIBY (1957), NRC (1968), SRIVASTAVA et al (1973), MIX et al. (1979), JAIN and SHARMA (1982) and SHARMA and JAIN (1982).

TABLE 2:

Analysis of variance

Source	df	S.S.	M.SS.
Genetic group	8	444.56	55.57**
Age group	6	1386.14	231.03
Error	48	466.55	9.72
Total	62	2297.25	

**=($P < 0.01$)

4.0 CONCLUSION

The present investigation revealed that in general, the mortality rates increased with the increase in exotic inheritance and decreased with the advancement of age. The percent mortality was more in interbreds than their respective original crosses of Gir. Hence the proper care of crossbred calves with 75% exotic inheritance should be taken during the first two months of age. Lower death rate of FG and FJG group indicated faster adoption than other genetic group.

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LA RACE BOVINE ASTURIENNE DES VALLEES

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RÉSUMÉ

Ce travail présente les caractéristiques morphologiques, productives et d'exploitation les plus importantes de la race Asturienne des Vallées. Les programmes de contrôle des performances et les modèles d'évaluation génétique pour la sélection de la race sont également décrits.

RESUMEN

Se presentan las características más importantes de la raza Asturiana de los Valles, tanto las características morfológicas, como productivas y de explotación. Así mismo se describen los programas de control de rendimientos y los modelos de evaluación genética para la selección de la raza.

1.0 INTRODUCTION

L'Asturienne des Vallées, aussi appelée la Carrenana ou l'Asturienne de l'Ouest, est une race bovine autochtone espagnole d'aptitude bouchère, d'une grande rusticité, possédant une bonne conformation à viande. Elle s'exploite dans des conditions semi-extensives dans les zones montagneuses du Centre et de l'Ouest de la Communauté Autonome de la Principauté des Asturies, bien qu'il existe des troupeaux importants dans toute la Cordillera Cantabrica (au nord de l'Espagne) et qu'elle ait commencé à s'implanter dans les zones arides au climat continental de l'intérieur de l'Espagne et même dans des zones à climat subtropical de l'Argentine.

La race Asturienne des Vallées (RAV) est parfaitement adaptée aux conditions difficiles de la Cordillera Cantabrica, et présente une grande résistance aux températures extrêmes, une bonne aptitude pour chercher s'alimenter dans les pâturages à forte pente, et une énorme capacité pour supporter des restrictions nutritives importantes pendant les mois d'hiver. Le climat asturien est tempéré-humide, avec des températures moyennes annuelles dans les zones de basse altitude de 9-11°C, et des précipitations annuelles de 1000-1400 cc/m². L'origine de cette race vient du Rameau Cantabrique et semble être différente de celle de la majorité des races bovines du nord espagnol, bien qu'avec une certaine influence du Rameau Rouge Ibérique (SANCHEZ BELDA, 1984).

2.0 RECENSEMENT ET STRUCTURE DE LA POPULATION

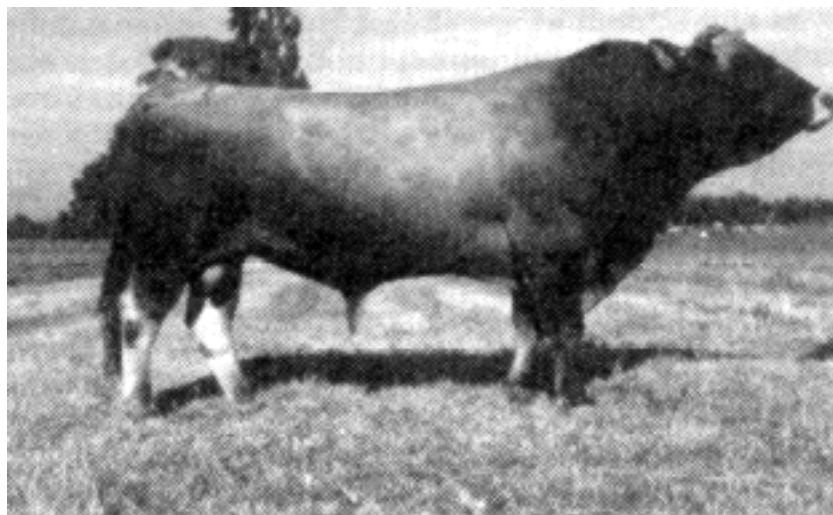
Le recensement des reproducteurs de race pure est de 38.000 têtes de bétail (ALONSO, communication personnelle), mais dans son habitat il existe quelques 55.000 vaches métissées, bien que très proches génétiquement de la RAV et qui peuvent être absorbées par celle-ci très rapidement. Le Livre Généalogique, créé en 1971 et dont la gestion dépend de l'Association Espagnole d'Éleveurs de Bétail Sélectionné d'Asturienne des Vallées (ASEAVA), comprend 13.000 reproducteurs. Il existe cependant une information généalogique abondante pour cette race à partir des années 30, surtout en ce qui concerne les taureaux de monte naturelle.

A partir des données du Livre Généalogique, CANON et al. (1992) signalent un intervalle moyen entre générations de 5.4 ans, et un coefficient de consanguinité moyen de 0.2%, avec une augmentation par génération de 0.24%. Le nombre de troupeaux effectifs (ROBERTSON, 1953) qui contribuent avec des bisaïeux est de 28, avec des grands-parents, 73, et avec des parents, 136. Le nombre des élevages considérés noyaux, c'est-à-dire qui vendent seulement des reproducteurs mais qui n'achètent jamais, s'élève à 8, et les fermes multiplicatrices, c'est-à-dire les élevages qui achètent et vendent des reproducteurs sont au nombre de 136.

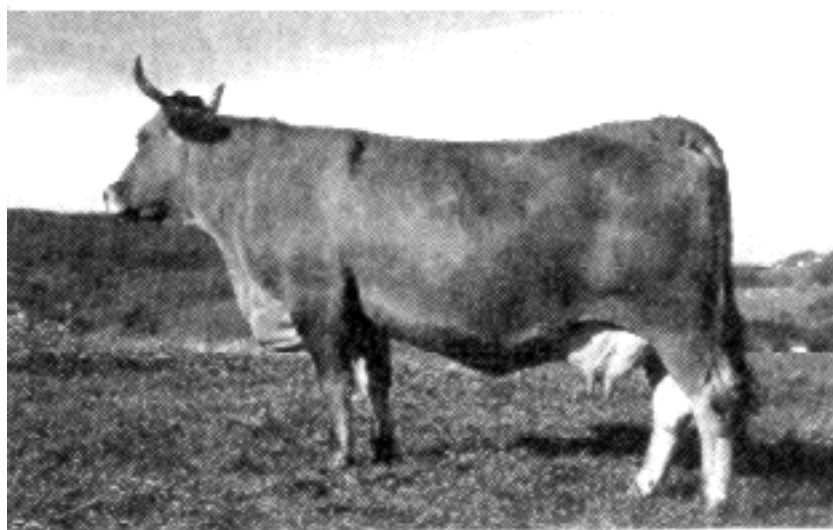
3.0 CARACTÉRISTIQUES

Les caractéristiques raciales suivantes peuvent être considérées comme standard (SANCHEZ BELDA, 1984; CIMA, 1986):

- Animaux de taille moyenne, harmonieux, amples, d'aspect vigoureux, à la peau souple et élastique et au poil court, fin et brillant.
- La tête est bien proportionnée, plutôt petite chez les mâles, le front plat avec un profil droit ou légèrement subconvexe, aux orbites proéminentes. Les cornes sont blanches avec la pointe noire, plus petites et épaisses chez les mâles, naissent dans la ligne de prolongation de la nuque pour se diriger ensuite vers l'avant chez les mâles et vers le haut chez les femelles.
- Le cou est moyen, court et musclé chez les mâles, avec un fanon moyennement développé, un garrot légèrement perceptible, bien uni à des épaules larges et acceptablement musclées, un dos long, équilibré et rectiligne qui finit par une large croupe, modérément musclée, et avec l'attache de la queue horizontale ou légèrement en hauteur.
- Le thorax et le ventre sont profonds, les côtes sont longues et arquées.



Taureau de la Race Asturienne des Vallées



Vache de la Race Asturienne des Vallées

- Les extrémités sont fortes et d'une longueur moyenne, bien musclées dans les parties les plus hautes, avec des cuisses tendant à la convexité, plus accusée chez les mâles. Les sabots ronds et durs sont fermés et d'une taille équilibrée.
- La robe est chataîn, variant du rouge noisette au jaune paille, avec des dégradations jusqu'au blanc crémeux observables sous les aisselles, le ventre, le periné, les mammelles, autour des yeux et, chez les femelles, autour du museau. La robe peut présenter des intensifications de couleurs avec l'apparition de poils noirs au bord des oreilles, sous les yeux et dans les zones supranasales. Le bord des paupières et les cils sont noirs. Les poils noirs sur le bord du fanon et le côté extérieur des extrémités antérieures, en particulier la partie supérieure et inférieure du membre antérieur peuvent être considérés comme caractéristiques. Toutes les extrémités sont noires: museau, sabots, pointes de la corne, extrémité de la queue et scrotum chez les mâles. Les muqueuses bucales, labiales, linguales et vulvo-anales sont noires ou d'une couleur ardoise foncée.
- La hauteur au garrot est de 130-135 cm, le périmètre thoracique est de 190-200 cm et le poids est de 600-650 Kg chez les femelles. Chez les mâles ces chiffres sont de 140-145 cm, 200-220 cm et 1.000 Kg respectivement.

On observe fréquemment des animaux de type culard, avec modification des caractéristiques signalées dans le sens d'une plus grande compacité, une plus grande convexité museulaire du dos et très spécialement de la croupe et des cuisses et avec tendance à la rectitude des aplombs postérieurs.

4.0 STRUCTURES DE PRODUCTION

La majorité des élevages fermiers RAV sont de petite taille, avec une moyenne de onze vaches par exploitation et une surface petite et généralement très dispersée. En général, la majorité des troupeaux utilise les pâturages communaux en altitude pendant des périodes de six mois en moyenne dont le début et la fin sont marqués par une tradition séculaire. Les élevages, en particulier vers l'intérieur, possèdent des installations très anciennes destinées exclusivement à servir d'abri pour le troupeau pendant l'hiver. Dans certaines zones où la concentration parcellaire ou la disponibilité de pâturages le permettent, se créent des exploitations moyennes avec des installations modernes et une rotation des pâturages. La main d'oeuvre est presque toujours exclusivement familiale.

L'herbe est la base de l'alimentation; elle est consommée en régime de pâture pendant les mois de printemps, été et automne, et sous la forme d'ensilage ou surtout de foin en hiver. Les aliments concentrés sont uniquement utilisés pour l'engraissement des veaux depuis le sevrage jusqu'à l'abattage.

Les éleveurs asturiens utilisent de préférence la monte naturelle, l'insémination artificielle concernant moins de 5% des femelles. La demande de taureaux de monte naturelle est de 800 à 1000 par an. Les taureaux employés pour les croisements industriels avec des vaches Holstein sont en majorité de type culard. La pénétration du gène culard chez les femelles est de l'ordre de 15% des effectifs. MEMSSIER (1984) cite la grande capacité d'adaptation des vaches culardes asturiennes à l'exploitation dans les dures conditions de montagne, ce qui contraste avec la perte de rusticité qui apparaît dans d'autres races en liaison avec le caractère culard.

5.0 SYSTEMES D'EXPLOITATION ET PRODUITS COMMERCIALISÉS

Il existe trois systèmes d'exploitation en Asturies selon la zone où se trouvent les élevages:

- Dans les zones d'altitude, le pâturage dans les cols de montagne pendant six mois se joint à la stabulation permanente le reste de l'année. Il existe aussi encore des troupeaux transhumants qui se déplacent en hiver vers les zones basses plus proches de la côte. Le principal produit commercialisé dans ce système est le veau sevré, il est rare de trouver des veaux engraisés jusqu'à l'abattage.

- Dans les zones d'altitude moyenne, le pâturage permanent dans des prés artificiels ou naturels est la règle générale, les animaux ne sont enfermés que dans le cas d'une forte tombée de neige. Bien que les veaux se vendent principalement entre 6 et 8 mois c'est-à-dire au moment du sevrage, il est plus fréquent que les éleveurs engraisent leurs veaux jusqu'à l'âge d'un an environ, avec une ration à base de paille et d'aliments concentrés.
- Sur la côte, on trouve un nombre considérable d'exploitations qui sont normalement de type laitier mais où quelques vaches asturiennes sont présentes; ce petit nombre est presque toujours de type culard, exploité en régime de stabulation quasi permanente. Il est cependant de plus en plus fréquent, comme résultat de l'instauration des quotas laitiers, d'observer la présence dans cette zone de troupeaux RAV qui pâturent les surfaces difficiles à mécaniser.

5.1 Produits commercialisés

Les animaux sevrés qui sont vendus vers 6-7 mois et 200-250 Kg de poids vif, sont uniquement alimentés à base de lait maternel et de pâturages et sont menés vers les fermes d'engraissement généralement situées hors des Asturies.

Les animaux engraisés sur l'exploitation sont sacrifiés à l'âge d'un an et lorsqu'ils ont atteint 250 Kg de poids de carcasse s'il s'agit de veaux normaux et à l'âge de 14-16 mois et 350 Kg s'il s'agit de mâles culards. Les prix varient de 500-600 pts/Kg pour les veaux normaux selon la conformation, à 750 pts/Kg pour les culards.

Il existe une demande stable de jeunes animaux culards, surtout des femelles, qui sont sacrifiés à l'âge de dix mois, avec un poids de carcasse de 180 Kg et un prix de 900 pts, un prix qui représente presque le double de celui d'un veau qui ne possède pas l'hypertrophie musculaire.

La demande d'animaux adultes (surtout les vaches) est croissante. Ces animaux sont sacrifiés à un poids proche des 300-350 Kg et un prix de 300-350 pts/Kg.

5.2 Caractéristiques de la carcasse

Les carcasses RAV sont longues, bien conformées et très peu grasses; le pourcentage de graisse dans la carcasse est le plus faible de toutes les races bouchères continentales européennes (ALONSO et al., 1991; VALLEJO et al., 1991; VALLEJO et al., 1992; CIMA et al., 1992) (Tableau 1).

6.0 DONNÉES DE PRODUCTION

Les vaches RAV sèvent en moyenne 0.80-0.85 veau par vache par an, ont une durée de gestation moyenne de 288 jours et un intervalle entre vêlages de 400 jours. Le premier vêlage a lieu à 33-34 mois, cependant dans les zones de basse altitude où les conditions alimentaires sont meilleures il est possible d'obtenir le premier vêlage à 24 mois. Le taux de naissances doubles est de 2,8%.

Les vêlages ont lieu principalement pendant les mois de février, mars et avril; il est intéressant de signaler que les naissances sans difficulté où l'aide manuelle n'est pas vraiment nécessaire représentent 85,5%, 10,1% ont besoin de beaucoup d'aide et 14% font l'objet d'une césarienne (REVUELTA et al., 1991).

Le poids à la naissance est d'environ 45, 43 et 41 Kg pour les animaux de type culard, semi culard ou normal, respectivement. Les poids au sevrage sont de 198, 202 et 212, après ajustement pour l'âge de la mère et le type de veau (ALONSO et al., 1991).

Ces mêmes auteurs signalent également que le poids majeur des veaux en fonction du sexe (lorsque les données sont ajustées pour l'âge de la mère, le type de veau et l'âge du veau au sevrage lorsque cela est nécessaire) est de 44 et 41 Kg pour les mâles et femelles respectivement à la naissance, et de 210, 203 Kg pour les mâles et femelles respectivement.

TABLEAU I.

Caractères de croissance et de carcasse de la race Asturienne des Vallées (n=21; VALLEJO et al., 1991; VALLEJO et al., 1992; CIMA et al., 1992).

Variables	m	E
Age (mois)	14,91	0,23
PV (kg)	520,41	13,47
GMD (kg)	1,10	0,02
ICV	4,39	0,18
PC (kg)	300,55	8,98
R (%)	57,64	0,65
LC (cm)	128,52	1,25
LP(cm)	83,86	1,75
PP (cm)	57,86	0,61
ICC (PC/LP)	2,34	0,06
MC (kg)	110,88	3,80
HC (kg)	25,80	0,72
GC (kg)	9,85	0,87
PMC (%)	75,51	0,67
PHC (%)	17,71	0,40
PGC (%)	6,66	0,52
RMHC	4,31	0,12
SLD (cm ²)	103,35	7,37

m: Moyenne arithmétique E: Erreur de la moyenne

PV = Poids avant l'abattage; GMD = Gain moyen quotidien; PC = Poids de la carcasse; R = Rendement; LC = Longueur de la carcasse; LP = Longueur de la jambe; PP = Profondeur de poitrine; ICC = Indice de compacité; MC = Poids du muscle; HC = Poids de l'os; GC = Poids de la graisse; PMC = Pourcentage de muscle dans la carcasse; PHC = Pourcentage d'os dans la carcasse; PGC = Pourcentage de graisse dans la carcasse; RMHC = Relation muscle/os de la carcasse; SLD = Surface du Longissimus dorsi;

7.0 PROGRAMME D'AMÉLIORATION

La RAV fait l'objet d'un programme d'amélioration génétique dont les objectifs concrets sont les suivants:

- Augmentation du nombre de veaux sevrés pour 100 vaches à travers l'amélioration de la fertilité, la facilité de naissance, et la viabilité des veaux.
- Augmentation du poids au sevrage à travers l'amélioration de la qualité maternelle et la capacité de croissance des veaux.
- Amélioration de la conformation à viande.
- Amélioration du potentiel de croissance musculaire pendant la phase sevrageabattage.

Pour cela, il est nécessaire de sélectionner des taureaux, pour le service d'insémination artificielle, entre les meilleurs veaux pour la croissance pré-sevrage à travers un pointage individuel pendant l'engraissement et un pointage postérieur de ces taureaux à travers leur descendance dans les noyaux de contrôle.

7.1 Organisation de l'amélioration

ASEAVA est une association qui réunit 1.300 exploitants et qui gère le Livre Généalogique; cette association est également responsable de l'obtention et de la diffusion de l'amélioration génétique ainsi que de la création et du fonctionnement des noyaux de contrôle de performance et de la sélection des taureaux d'insémination artificielle. ASEAVA reçoit un appui scientifique

pour le programme d'amélioration de la part du Département de Production Animale de la Faculté de Vétérinaire de Madrid qui se charge de l'indexation des animaux.

L'Administration Régionale des Asturies, à travers le Centre de Sélection et Reproduction Animale de Somi6, réalise des travaux d'appui et d'aide technique, ainsi que d'analyse des données des contrôles de rendements.

7.2 Contrôle des performances en ferme

En ce moment, le CRC (Contrôle de Rendements Bouchers) est mené par ASEAVA et comprend plus de 2.000 vaches, la prévision étant de 6.000 en 1994. Le CRC réunit l'information sur les généalogies et l'identification des individus, ainsi que les dates d'accouplement, vêlage et sevrage, poids à la naissance et sevrage du veau, difficulté de naissance et les données suivantes concernant le veau: son sexe et type ainsi que la conformation et le pointage culard au sevrage. Il est prévu d'étendre le contrôle à la période post-sevrage en 1993.

7.3 Contrôle des performances individuelles en station

Cet examen sert à sélectionner les reproducteurs mâles, sur le coefficient de croissance, entre une série d'animaux contemporains élevés dans les mêmes conditions. De 80 à 100 animaux sont testés une fois par an en séries de 10 ou 20 veaux avec un écart d'âge maximum entre les membres de chaque groupe inférieur à 8 semaines; l'examen commence lorsque les animaux ont 6 mois et passent une période d'adaptation de trois mois, à partir de laquelle commence une période d'engraissement de 5 mois. L'engraissement se fait à base de fourrage de bonne qualité et d'aliment concentré. 10% des taureaux testés sont destinés à l'insémination artificielle.

7.4 Indexation

Les animaux soumis au contrôle sont étudiés tous les semestres à travers un modèle animal en utilisant la méthodologie BLUP pour les caractères poids à la naissance et poids au sevrage, et un modèle père selon la méthodologie proposée par GIANOLA et FOULLEY (1983) est utilisé pour la difficulté de naissance. Une information est proposée à l'éleveur sur les mérites génétiques des animaux, taureaux et vaches, pour les caractères poids à la naissance et poids au sevrage, ainsi que la probabilité pour chaque mâle de donner une naissance facile ou difficile lorsqu'il est accouplé avec une primipare ou une multipare. Il est prévu aussi de signaler pour chaque reproducteur la proportion de veaux à hypertrophie musculaire qu'il a produit.

7.5 Schéma de sélection

Etant donné que le caractère culard produit chez les femelles une perte de rusticité, il est prévu de créer une ligne d'animaux culards qui accumulent les gènes modificateurs pour l'expression de l'hypertrophie musculaire. De cette manière, lorsque la sélection pour les caractères de croissance sera développée, les reproducteurs obtenus par cette lignée pourront transmettre le caractère à la descendance avec une grande pénétrance, et en même temps les éleveurs pourront ainsi atteindre leurs objectifs économiques et éliminer simultanément l'expression du gène chez les femelles de la population.

Les reproducteurs mâles culards seront contrôlés à travers le gain moyen quotidien de leurs fils au sevrage, difficulté de naissance, pourcentage de culards dans la descendance, niveau de mortalité perinatale et défauts associés au gène culard.

Les taureaux normaux seront sélectionnés dans une première phase par le GmQ au sevrage de leurs fils, la difficulté de naissance et conformation, et dans une deuxième phase par ces caractères relatifs aux vaches, filles de ces taureaux.

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LA RACE BOVINE ASTURIENNE DE MONTAGNE

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RÉSUMÉ

Ce travail présente les caractéristiques morphologiques, productives et d'exploitation les plus importantes de la race Asturienne de Montagne. Les programmes de contrôle des performances et les modèles d'évaluation génétique pour la sélection et la conservation de la race sont également décrits.

RESUMEN

Se presentan las características más importantes de la raza Asturiana de la Montaña, tanto las características morfológicas, como productivas y de explotación. Así mismo se describen los programas de control de rendimientos y los modelos de evaluación genética para la selección y conservación de la raza.

1.0 INTRODUCTION

La race Asturienne de Montagne, aussi appelée Asturienne de l'Est ou Casina, est une race bovine autochtone espagnole rustique à viande exploitée dans des conditions de type extensif dans la zone orientale de la Communauté Autonome de la Principauté des Asturies (dans le nord de l'Espagne) principalement dans le massif montagneux des Pics d'Europe au sein du Parc National de Covadonga. Les conditions d'exploitation sont extrêmes, avec des températures moyennes annuelles dans les zones de basse altitude de 9°C et des précipitations moyennes annuelles qui oscillent entre 1.200 et 1300 cc/m².

La race Asturienne de Montagne (RAM) est intégrée depuis longtemps dans le paysage et l'écosystème de l'est Asturien, et joue un rôle important dans la conservation du milieu naturel et du paysage, et dans la fixation de la population dans des zones pauvres. Son origine est ancienne, elle appartient au Rameau Cantabrique.

La RAM est l'héritière de la "Roxa" de l'Est (ou Rouge de l'Est), qui existe dans les Asturies depuis des temps immémoriaux, et qui bien que présentant de grandes différences entre individus et zones, était dans son ensemble différente de l'autre grand regroupement bovin asturien, la "Roxa" de l'Ouest (ou Rouge de l'Ouest) que nous connaissons aujourd'hui comme Asturienne des Vallées. Pour la "Roxa" de l'Est, les éleveurs du Concejo de Caso et des vallées limitrophes, comme Ponga, ont sélectionné leurs animaux pour une meilleure production de lait utilisé pour la production de fromage. Cette sélection a rendu célèbres les taureaux venus du Concejo de Caso pour la production de lait de leurs filles, ce qui a converti les exploitations en exportatrices de reproducteurs mâles pour tout l'Orient des Asturies.

2.0 RECENSEMENT ET STRUCTURE DE LA POPULATION

Le recensement officiel de la RAM, d'après le Livre Généalogique (créé en 1978 et dont la gestion est à la charge de l'Association d'Exploitants de Bovins Sélectionnés de race Asturienne de la Montagne (ASEAMO)), comprend 3.000 reproducteurs. L'effectif des reproductrices de la race Casina a diminué en raison du croisement, surtout avec des mâles de la race Asturienne des Vallées. D'un autre côté il existe une demande croissante de vaches RAM de la part d'éleveurs en dehors des Asturies pour son exploitation en extensif et son utilisation pour le croisement industriel, ce qui diminue la capacité de remplacement des troupeaux de RAM.

Le nombre de génisses inscrites au Livre Généalogique a diminué de façon importante dans les dernières années: comme exemple, seulement 99 individus ont été identifiés en 1991. Il faut signaler que dans une race comme la RAM où la presque totalité des éleveurs sont associés à l'ASEAMO, où au moins 95% des animaux de race pure sont inscrits au Livre Généalogique, et où toutes les reproductrices de race pure sont rigoureusement marquées, un chiffre aussi faible semble indiquer que le troupeau RAM exploité en pure n'est constitué que de 1.000 reproductrices (en considérant un taux de remplacement optimiste du 10%). Une interprétation plus alarmante de la diminution du chiffre des animaux inscrits au Registre de Naissance serait la suivante: dans la RAM se produisent à peu près 75 vêlages par an pour chaque 100 vaches, ce qui semble indiquer que seulement 270 reproductrices pures sont fécondées par des mâles Casinos.

En analysant les registres du Livre Généalogique, CANON et al. (1992) signalent l'importance des exploitations du Concejo de Caso malgré la diminution dramatique du nombre d'animaux RAM à cet endroit. Le nombre de troupeaux considérés comme noyaux, c'est-à-dire les exploitations qui n'ont jamais acheté de reproducteurs en dehors de leur propre ferme mais qui en vendent à d'autres est de 4, 22 sont considérées comme multiplicateurs et 19 exploitations correspondent au niveau commercial de celles qui achètent mais ne vendent pas. Le nombre effectif de troupeaux (ROBERTSON, 1953) qui contribuent à travers les bisaïeux est de 9, de même que ceux qui contribuent à travers les grands-parents, et 22 contribuent à travers les parents. L'intervalle moyen de génération est de 5,3 années et le coefficient de consanguinité moyen est de 1,2% avec une croissance par génération de 0,7% (CANON et al., 1992).

3.0 CARACTÉRISTIQUES

Les caractéristiques raciales suivantes peuvent être considérées comme standard (SANCHEZ BELDA, 1984; CIMA, 1986):

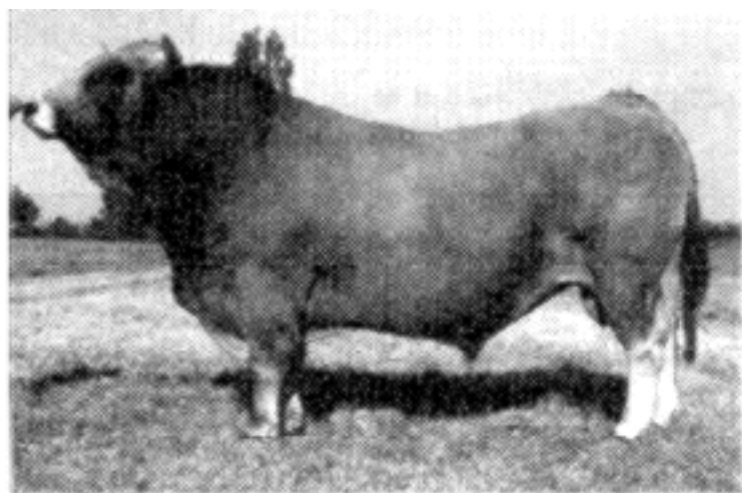
- Animaux subeumétriques, vigoureux, profonds, et harmonieux dans leur petite taille.
- Tête moyenne, de profil droit, avec une protubérance occipitale marquée. Oreilles petites très poilues et yeux légèrement bombés avec un regard tranquille. Les cornes naissent dans la ligne de prolongation de la nuque, plus courtes et larges chez les mâles, horizontales à la base et dirigées ensuite vers l'avant et le haut avec la pointe vers l'arrière et vers l'extérieur.
- Le cou est moyen et maigre, sauf chez les mâles, avec un fanon marqué et discontinu, un garrot peu marqué et bas, bien uni à un dos peu musclé mais bien droit, légèrement déprimé qui finit en croupe étroite et légèrement inclinée, avec l'attache de la queue légèrement en hauteur.
- Thorax rabaissé, poitrine profonde et large et ventre proportionné.
- Extrémités courtes ou moyennes, charnues dans leur partie supérieure, aux os très fins, et aux sabots petits, ronds et durs.
- Bon développement des mamelles, aux trayons bien implantés et peau fine et souple.
- Robe châtain, plus ou moins dégradée jusqu'à des tons crémeux, avec une bande blanche autour du museau et des yeux; une couleur dégradée jusqu'au ton crémeux qui se manifeste aux aisselles, au niveau du ventre, aux mamelles, à l'intérieur des cuisses et au niveau du périnée. Intensification de la couleur, jusqu'à des poils noirs, sur le bord des oreilles et moins accentuée sur le bord du fanon. Les extrêmes, museau, pointe des cornes, pointe de la queue, et scrotum chez les mâles sont noirs, ainsi que les paupières et les cils. Les muqueuses du nez, buco-linguales et ano-vulvaires sont noires ou ardoisées.
- La hauteur au garrot est de 125-130 cms chez les femelles, le périmètre thoracique 160-170 cms, et le poids vivant 400-500 Kg. Chez les mâles ces mesures sont respectivement 130-135 cms, 190-200 cms et 600-700 Kg.

4.0 STRUCTURE DES EXPLOITATIONS

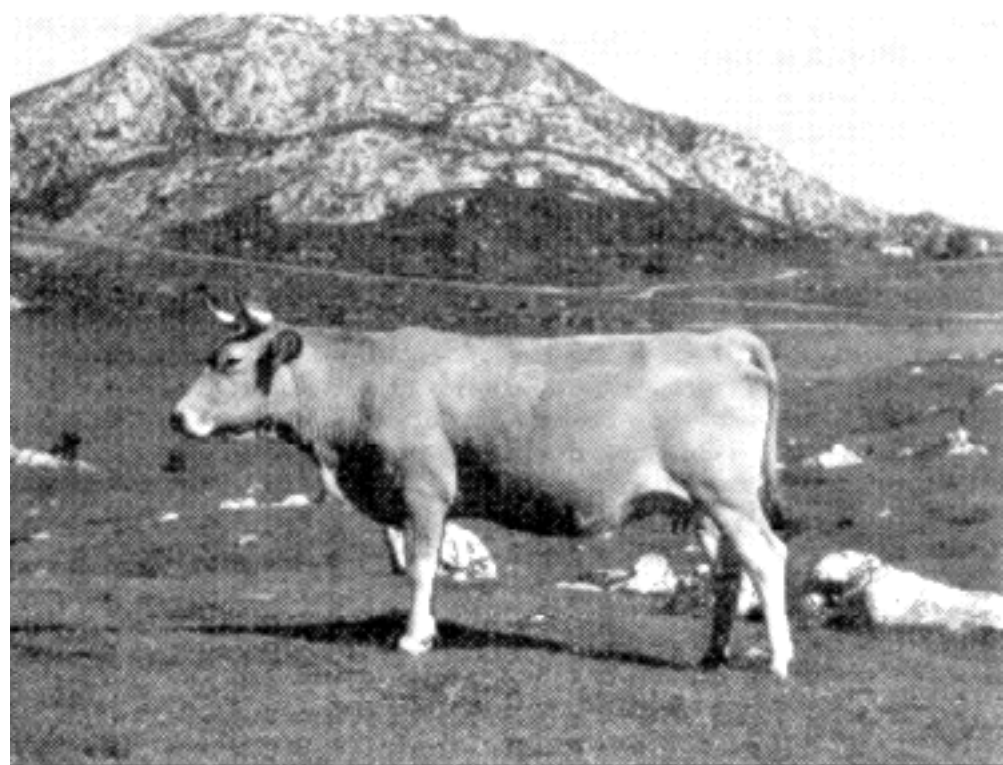
Les exploitations sont petites et comptent une moyenne de 8 vaches Casinas et un nombre variable de têtes d'autres races d'aptitude laitière ou mixte. Les vaches Casinas utilisent généralement des pâturages communaux des Sierras proches, avec une exploitation du type "majada", ou grand troupeau, où les vaches appartiennent à plusieurs exploitants. Les vaches Casinas paissent dans ces prés communaux à des dates variables entre le 1 avril et le 31 décembre. Pendant les trois mois restants, c'est-à-dire pendant la période hivernale, les animaux ne reçoivent que du foin d'herbe sans aucun supplément. Les installations réservées aux animaux RAM sont les plus anciennes et traditionnelles. La main d'oeuvre et les soins aux animaux sont limités et de type familial. L'utilisation de taureaux d'insémination artificielle est, étant donné ces conditions, pratiquement nulle.

5.0 PRODUITS COMMERCIALISÉS

- Le produit fondamental est le veau mâle sevré vers 7-8 mois et vendu dans les foires d'automne à un prix qui oscille entre 30 et 35.000 pts/tête. Les veaux provenant de croisements industriels avec des taureaux à viande se vendent 60-65.000 pts/tête en raison de leur plus grande taille et de leur meilleure conformation.
- Les génisses de remplacement de 16-18 mois, sont très demandées par les fermiers extensifs de la Meseta Continentale espagnole à cause de leur docilité, rusticité et facilité de vêlage.
- Les Taureaux de 2.5-3 années sont exploités de façon extensive et les carcasses sont exclusivement destinées aux restaurateurs, sous des conditions très précises certifiées par ASEAMO.



Taureau de la Race Asturienne de Montagne



Vache de la Race Asturienne de Montagne

6.0 RÉSULTATS DE REPRODUCTION ET DE CROISSANCE DU VEAU

75% des vêlages ont lieu entre janvier et mai; 98% sont des vêlages faciles (REVUELTA et al.,1991). L'intervalle moyen entre vêlages dans les conditions sous lesquelles vit cette race est de 445 jours. Le poids moyen du veau à la naissance est de 25 Kg et de 139 Kg au sevrage (ALONSO et al.,1991).

Les données sur la qualité de la carcasse et de la viande sont présentées au Tableau 1 (CIMA et al.,1992a et b; VALLEJO et al.,1991)

7.0 PROGRAMME DE CONSERVATION ET AMÉLIORATION

L'objectif principal du plan de conservation et d'amélioration de la RAM est de maintenir ou augmenter le nombre de vaches Casinas tout en conservant la variabilité génétique. Pour cela les actions essentielles sont les suivantes:

- Actualiser le recensement, afin de préciser les effectifs de la race; subventionner les accouplements en race pure pour essayer de diminuer la différence entre la valeur économique du veau pur et celle du veau croisé.
- Création d'une banque de semence et d'embryons congelés, connectée avec un plan de sélection.

TABLEAU I.

*Caractères de croissance et de carcasse de la race Asturienne de Montagne (n 42)
(VALLEJO et al.,1991; CIMA et al.,1992a et b)*

Variables	m	E
Age (mois)	18,95	0,13
PV (Kg)	354,98	4,16
GMD (kg)	0,47	0,02
PC (kg)	172,07	3,07
R (%)	48,81	0,46
LC (cm)	115,88	0,54
LP (cm)	74,40	0,84
PP (cm)	54,14	0,27
ICC (PGLP)	1,48	0,02
MC (kg)	61,22	1,30
HC (kg)	16,76	0,30
GC (kg)	5,57	0,23
PMC (%)	73,14	0,33
PHC (%)	20,09	0,22
PGC (%)	6,66	0,25
RMHC	3,66	0,05
SLD (cm ²)	55,31	1.80

m: Moyenne arithmétique ET: Erreur de la moyenne

PV = Poids avant l'abattage; GMD = Gain moyen quotidien; PC = Poids de la carcasse; R = Rendement; LC = Longueur de la carcasse; LP = Longueur de la jambe; PP = Profondeur de poitrine; ICC = Indice de compacité; MC = Poids du muscle; HC = Poids de 1 os; GC = Poids de la aisse; PMC = Pourcentage de muscle dans la carcasse; PHC = Pourcentage d'os dans la carcasse; PGC = Pourcentage de graisse dans la carcasse; RMHC = Relation muscle/os de la carcasse; SLD = Surface du Longissimus dorsi;

- Testage individuel de 30 mâles casinos par an, en conditions similaires à celles des exploitations. Le meilleur mâle pour les caractères de croissance sera destiné à l'insémination artificielle pour augmenter la banque de semence; les autres tout meilleurs mâles seront destinés aux élevages RAM pour la monte naturelle tout en contrôlant la consanguinité.
- Inclusion en 1994 pour le Contrôle de Rendements de toutes les vaches enregistrées sur le Livre Généalogique. Actuellement ce contrôle ne se fait que pour 400 reproductrices. Elaboration, avec les données obtenues, d'un Plan d'Amélioration qui permette d'augmenter les rendements économiques sans perdre les avantages productifs traditionnels.
- Mise en route d'un projet expérimental pour étudier les possibilités de production de la RAM en conditions d'exploitation extensives en accord avec la réforme de la P.A.C., comme appui à la ligne de production de viande de taureau Casin, tout en étudiant la possibilité d'obtention d'un produit de qualité commerciale différent.

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