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**ANIMAL GENETIC RESOURCES INFORMATION**

**BULLETIN D’INFORMATION SUR LES RESSOURCES GÉNÉTIQUES ANIMALES**

**BOLETÍN DE INFORMACIÓN SOBRE RECURSOS GENÉTICOS ANIMALES**
Editorial
The Global Strategy for the Management of Farm Animal Genetic Resources – an Update

The FAO programme entity Global Strategy for the Management of Farm Animal Genetic Resources is to help tap the significant potential of animal genetic resources to both food security and rural economic diversification and development. To realize this potential, the use and development of animal genetic resources must be effectively planned to achieve the desirable outcomes. Past attempts to increase agricultural production using genetic improvement of domestic animals have not always been well planned and undertaken with all of the important factors to be considered. Locally adapted breeds are often able to survive and produce valuable products in low input and variable environments. A strategy to develop them is likely to be more sustainable over the long-term than reliance external genetic resources.

Animal genetic diversity is rapidly eroding despite the strongly growing demand for livestock products. Conservation and development of animal genetic resources is essential to enable farmers to adapt to changing environmental conditions and consumer demands.

FAO, in using its comparative advantages, is leading efforts to sustainably use, develop, and conserve animal genetic resources, and since 1993 has been engaged in the preparation of the Global Strategy for the Management of Farm Animal Genetic Resources. The Global Strategy is intended to serve as a strategic framework to guide international efforts in the animal genetic resources sector. Preparation of the First Report on the State of the World’s Animal Genetic Resources will be an essential element of the Global Strategy up to 2004-2005. There is a specific clear mandate from FAO member countries through the Commission on Genetic Resources for Food and Agriculture to develop the Global Strategy for the Management of Animal Genetic Resources along the lines followed by this entity. Further priority actions for the sustainable use of farm animal genetic diversity will be based on the First Report. The proposed Report is a country-driven process, endorsing FAO’s guidelines for the preparation of country reports. Furthermore, the FAO Working Group on Animal Genetic Resources requested that countries, donors, stakeholders and FAO increase efforts to mobilize the resources necessary, including financial resources, in order to successfully undertake the preparation of the Report and implement priority follow-up action. FAO stands ready to assist its member nations in the preparation of this landmark document and in implementing country assistance for priority actions in conservation and management of farm animal genetic resources. The country driven State of the World’s Animal Genetic Resources process has already been initiated with the FAO Director-General inviting countries to participate in this global effort. To date 103 countries have formally accepted. A set of training and reporting tools has been developed to assist countries in preparing their national reports. A global training effort has been implemented, reaching 123 countries and 224 professionals in 2001, and ending up in May 2002 by reaching 53 additional countries and 120 more professionals. This undertaken is expected to go on to the year 2005 until the technical and analytical work
related to Report has been completed and will expectedly cost US$ 3,400,000 of extra-budgetary funds.

This activity will contribute to the integration of the management of animal genetic resources into other agricultural activities and will lead to the enhancement of capacities of communities to utilize local animal genetic resources for sustainable rural livelihoods, as it will address more equitable access to resources and helps develop international instruments to regulate global animal genetic resources. The activity also relates to other activities of concern to FAO like Biological Diversity, Biotechnology, Ethics and Sustainable Livelihoods.

The Editors
Editorial
Stratégie Mondiale pour la Gestion des Ressources Génétiques des Animaux Domestiques - Mise à Jour

Le programme de la FAO pour la Stratégie mondiale pour la gestion des ressources génétiques des animaux domestiques vise à exploiter l’important potentiel de ressources génétiques animales tant pour atteindre la sécurité alimentaire que pour la diversification et développement de l’économie rurale. Pour atteindre ce but, l’utilisation et le développement des ressources génétiques animales doivent être planifiés de façon effective. Les actions entreprises par le passé pour augmenter la production agricole au moyen de l’amélioration génétique des animaux domestiques n’ont pas toujours été bien planifiées ni réalisées en tenant compte de tous les facteurs nécessaires. Les races locales adaptées sont souvent capables de survivre et de fournir des productions valables avec un minimum d’intrants et dans des conditions environnementales variables. Une stratégie orientée vers le développement de ces races serait plus durable à long terme plutôt que de recourir à des ressources génétiques externes.

La diversité génétique animale subit une érosion rapide malgré la forte demande croissante de produits animaux. La conservation et le développement des ressources génétiques animales sont essentiels pour permettre aux éleveurs de survivre et de s’adapter aux changements des conditions de milieu et de la demande des consommateurs.

La FAO, grâce aux avantages dont elle dispose, dirige les efforts pour une utilisation, un développement et une conservation des ressources génétiques animales durables. Pour cela, depuis 1993, la FAO a entrepris la préparation de la Stratégie mondiale pour la gestion des ressources des animaux domestiques qui doit servir comme cadre stratégique d’orientation des efforts internationaux dans le secteur des ressources génétiques animales. La préparation du Premier rapport sur la Situation mondiale des ressources génétiques animale sera un des éléments essentiels de la Stratégie mondiale pour la période 2004-2005. Il existe un mandat spécifique des pays membres de la FAO à la Commission pour les ressources génétiques pour l’alimentation et l’agriculture afin de développer la Stratégie mondiale pour la gestion des ressources génétiques des animaux domestiques suivant les lignes préconisées par cette entité. Les actions ultérieures pour l’utilisation durable des diversité génétique des animaux domestiques feront référence à ce Premier rapport. Ce Rapport doit être le résultat d’une procédure nationale de démarrage qui accepte les normes de la FAO pour la préparation du rapport national. En outre, le Groupe de travail de la FAO pour les Ressources génétiques animales a demandé aux pays, aux donateurs, aux parties prenantes et à la FAO d’augmenter leurs efforts pour mobiliser les ressources nécessaires, y compris des ressources financières, afin de pouvoir commencer avec succès la préparation du Rapport et mener à terme les actions de suivi prioritaires. La FAO est prête à donner son assistance aux pays membres pour la préparation de ce document général et pour la réalisation des actions prioritaires nécessaires à la conservation et la gestion des ressources génétiques des animaux domestiques. La procédure nationale sur la Situation mondiale des ressources génétiques animales a déjà été lancée avec l’invitation du Directeur général aux pays membres pour qu’ils prennent part...

Cette activité contribuera à l’intégration de la gestion des ressources génétiques animales dans d’autres activités agricoles et renforcera les capacités des communautés rurales à utiliser les ressources génétiques animales locales pour subvenir durablement à leurs besoins, étant donné qu’elle permettra un accès plus équitable aux ressources et aidera le développement des moyens internationaux pour réglementer les ressources génétiques animales mondialement. Cette activité a aussi des liens avec d’autres activités qui concernent la FAO, telles que la diversité biologique, la biotechnologie, l’éthique et les moyens d’existence durables.

Les Editeurs
Editorial

Estrategia Mundial para la Gestión de los Recursos Zoogenéticos - Actualización

El programa de la FAO para la Estrategia mundial para la gestión de los recursos zoogenéticos fomenta en un primer momento la importancia del potencial de los recursos zoogenéticos con el fin de alcanzar la seguridad alimentaria y mantener la diversificación y el desarrollo de la economía rural. Para alcanzar este objetivo, la utilización y el desarrollo de los recursos zoogenéticos deben ser planificados de forma efectiva. Las acciones llevadas a cabo en el pasado para aumentar la producción agrícola a través el uso de la mejora genética de los animales domésticos no siempre fueron planificadas correctamente ni llevadas a cabo teniendo en cuenta todos los factores implicados. Las razas locales adaptadas son a menudo capaces de sobrevivir y proporcionar productos válidos con un mínimo de aportes y en condiciones ambientales variables. Una estrategia orientada hacia el desarrollo de estas razas sería más sostenible a largo plazo en vez de cubrir simplemente las necesidades nacionales con recursos genéticos externos.

La diversidad genética animal presenta una erosión rápida a pesar de la fuerte demanda creciente de productos animales. La conservación y el desarrollo de los recursos genéticos animales son esenciales para permitir a los agricultores adaptarse a los cambios de condiciones del ambiente y de la demanda de los consumidores.

La FAO, gracias a las ventajas de que dispone, dirige sus esfuerzos hacia una utilización, un desarrollo y una conservación sostenible de los recursos zoogenéticos. Para ello, y desde 1993, la FAO ha dado inicio a la preparación de la Estrategia mundial para la gestión de los recursos zoogenéticos de los animales domésticos que deberá servir de marco estratégico de orientación a los esfuerzos internacionales dentro del sector de los recursos zoogenéticos. La preparación del Primer informe sobre la Situación mundial de los recursos genéticos animales será uno de los elementos esenciales de la Estrategia mundial para el período 2004-2005. Existe un mandato específico de los países miembros de la FAO a la Comisión para los recursos genéticos para la alimentación y la agricultura, para que desarrolle la Estrategia mundial para la gestión de los recursos genéticos de los animales domésticos en base a las normas establecidas por esta entidad. Las acciones posteriores para el uso sostenible de la diversidad genética de los animales domésticos harán referencia a este Primer informe. Este Informe debe ser el resultado de un acuerdo nacional inicial que acepte las normas de la FAO para la preparación del informe nacional. En un segundo momento, el Grupo de trabajo de la FAO para los Recursos zoogenéticos solicitará a estos países, a los donantes, a los agricultores, a los ganaderos y a la FAO, que aumenten sus esfuerzos para movilizar los recursos necesarios, incluidos los financieros, para poder iniciar con éxito la preparación del Informe y llevar a cabo las actividades prioritarias de seguimiento. La FAO está dispuesta a aportar su asistencia a los países miembros en la preparación de este documento general y en la realización de las actividades prioritarias necesarias para la conservación y la gestión de los recursos zoogenéticos. El informe nacional sobre la Situación mundial de los recursos genéticos animales ha iniciado ya con la invitación del Director general a los países miembros para que tomen parte en este esfuerzo global.
Hasta hoy, 103 países han confirmado oficialmente su adhesión. Se ha puesto a punto una metodología para la formación y la preparación del informe, y ayudar a los países en la preparación del informe nacional. También se ha realizado un esfuerzo global de formación que ha beneficiado en 2001 a 123 países y 224 profesionales, y 53 países y 120 profesionales hasta mayo 2002. Esta situación debería seguir hasta el 2005, es decir, hasta la finalización del trabajo técnico y analítico del Informe, y esto con un costo previsto de $EE.UU. 3 400 000 con cargo a los fondos provenientes de los presupuestos extraordinarios.

Esta actividad contribuirá en la integración de la gestión de los recursos genéticos animales con otras actividades agrícolas y llevará a fomentar las capacidades de las comunidades en la utilización de los recursos genéticos de animales locales a través de medios de existencia rurales sostenibles, dado que permitirá un acceso más equitativo a los recursos y ayudará al desarrollo de los medios internacionales para normalizar los recursos zoogenéticos globalmente. El informe se refiere también a otros actividades que conciernen a la FAO, tales como la biodiversidad biológica, la biotecnología, la ética y los medios de subsistencia sostenibles.

Los Editores
Conservation of farm animal biodiversity: history and prospects

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Summary

The conservation and sustainable use of animal genetic resources (AGR) is now recognized as a legitimate activity of public concern in which inter-governmental, governmental, non-governmental and private sectors are involved. Livestock breeds became threatened on a large scale only in the second half of the 20th century. They are now recognized as a significant human heritage resulting from domestication whose loss would deplete the quality of human life. Conservation as a conscious and organized activity is therefore a new item on the public agenda. This paper traces the origin of livestock conservation from the Vision in the 1950s and 1960s through the awakening of the environmental movement with the creation of UNEP in 1972, followed by the development of a Joint Conservation Infrastructure and Programme for animal genetic resources in the 1980s by FAO and UNEP.

The paper describes the context, participants, constraints, opposition and activities of building the AGR Conservation Infrastructure and Programme. Although the concept of conservation was opposed by some and there were both financial and political difficulties, an effective institutional infrastructure for conservation was built by FAO by 1990 using UNEP funds. In 1992, the advent of the Convention on BioDiversity offered substantial funding for project activities for the first time through the Global Environmental Facility (GEF). At that point it was desirable to move activities from central planning to the design, funding and operation of local or national conservation projects. “Top-down” institutional control should have been replaced by “Bottom-up” conservation activities. Regrettably this did not happen during the 1990s and, as shown by successive editions of the World Watch List, the number of endangered livestock breeds has continued to increase. Now that the conservation vision is accepted and the institutional infrastructures are in place it is time for a new dynamic by creating and funding specific conservation projects which harness the local human resources of knowledge and enthusiasm.

Resumen

La conservación y utilización sostenible de los recursos genéticos animales (ANGR) ha sido ahora reconocida como actividad legítima de beneficio público en cuanto se refiere a los sectores interesados a nivel intergubernamental, gubernamental, no gubernamental y privados. Sólo a partir de la segunda mitad del siglo XX las razas domésticas empezaron a estar en peligro de
Conservation of farm animal biodiversity

Introduction

Entry into a new century and a new millennium is an appropriate time to stand back and review the Conservation of Animal Genetic Resources. The domestication and use of animals by humans dates back about 12 thousand years. Despite the small number of mammalian species which mankind chose to domesticate in the few primary and secondary (or copy-cat) Centres of Origin (Payne and Hodges, 1997) several thousand distinct breeds or races have spread across the earth. This bio-diversity results both from natural selection for adaptation as people emigrated with their animals over the surface of the earth and also from human choices for use or aesthetic appearance. The preferential selection of distinct genetic traits is reflected in the breeds, types or races that are adapted to specific uses or environments and that are often named after the language, people or locality where they are dominant. This vast array of thousands of breeds is a human heritage worthy of conservation.

Keywords: Strategy for conservation, Technical and financial infrastructures, Policy decision, Convention on Biological Diversity

In the twentieth century, humanity which shaped animal bio-diversity over the millennia suddenly became the destroyer of those same domestic animal breeds. This aggression is driven by intensification of food production which favours only a few breeds. Biodiversity accumulated over thousands of generations is today challenged by an accelerating process of extinction. While mankind behaved wisely, though almost unconsciously, in building-up bio-wealth we are now foolishly squandering animal-capital for short-term gains. And we are aware of what we are doing.
The Three Stages of Human Endeavour

Fortunately, the twentieth century also produced some people of wisdom and vision who saw the danger and several decades ago called for a new movement for the Conservation and Improved Use of Animal Genetic Resources. The idea of conserving endangered farm animals was an innovative idea in the 1960s. Like all novel and important ideas, it had opponents. The new vision called for global action involving cooperation at local, national and international levels. During the decades since the 1960s the Farm Animal Conservation Movement has passed through the predictable phases of most human innovations (Table 1). They are: Vision; Programme Infrastructures; and Projects.

In small projects at one location the three phases may all be carried out by a small team working together. When a new endeavour calls for change on a large or global scale, the three phases of human endeavours must be separated. Each phase needs special skills, resources and people. Visionaries are rarely able to build effective infrastructure; institutions are rarely skilled at hands-on project operations. The vision for Animal Genetic Conservation calls for change globally and needs co-operation and division of labour at local, national and international levels. It is part of the thesis of this paper that the distinction between Programme Infrastructures and Project Activities in the Conservation of Animal Genetic Resources has not yet been recognized.

Top-Down and Bottom-Up Approaches to Animal Conservation

New human enterprises can also be viewed as “Top-Down” and “Bottom-Up” models. These two terms can be illustrated by applying them to the three phases of human endeavour. Offering a new vision is very unusual work and nearly always flows from individuals who rarely have the skills for implementation. It is the essential first step. We may paraphrase the biblical observation (Bible, Proverbs, 29, 18): “Where there is no vision, the people perish” by saying “Where there is no vision for conservation the animals will perish”. The Vision may come from Top-Down or Bottom-Up. A visionary may be a scholarly, academic thinker or a practical hands-on activist at a local level. Visionaries rarely become the operators of successful large-scale operations.

By contrast, Creation of Infrastructures is usually a Top-Down task requiring centralized planning, analysis, budgeting, and thinking on the grand scale. The global Vision has to be clothed with reality so that Infrastructures are created which will truly support field projects. Programme Infrastructures must be neither so large, nor expensive nor cumbersome that they stand in the way of local action; but they must be authentically related to reality, strong and flexible enough to encourage local projects. The great danger, which regrettably has recently happened in Animal Genetic Conservation, is to try and use Technical Infrastructure from the centre to control local

Table 1. Three typical stages of new human endeavours.

- **Vision** originating from individuals - thinkers and activists.
- **Creation of Programme Infrastructures** – institutions.
- **Project Activities** in the field – local people.
Conservation of farm animal biodiversity

Project Activity. Such a model may be suitable for deployment of nuclear arms around the world by a super-power where all local actions are controlled by a Commander-in-Chief. It does not work in Domestic Animal Conservation where each local project has unique characteristics, specific breeds and environments, indigenous knowledge and cultures. The danger of creating Infrastructure is that the people in charge are tempted to see themselves as responsible for organizing the whole global activity. In other words they have a Top-Down approach in which they think it is possible for the centre to decide how the projects will operate on the ground. This is clearly nonsense on a world scale with animals. Individual conservation projects must germinate in the local seedbed in a Bottom-Up model using local knowledge and resources which are linked into national and global infrastructures that provides technical information, publications, training and support.

The parties to the farm animal conservation movement are the following: governments, UN inter-governmental agencies, and local people often grouped as non-governmental organizations (NGOs). Effective action requires the parties to co-operate. The Intergovernmental UN agencies can create the technical and financial infrastructures; governments can provide an integrated national approach to conservation and supply local resources and support to projects; and local people as NGOs can run Project Activities to save the animals that are so often in remote locations. Thus competent Programme Infrastructures empower local people with training, technical knowledge and funds (Top-Down) while the conservation projects on the ground are implemented by committed local people, often livestock owners with long-term interests in the animals (Bottom-Up). Further discussion of the role of the parties is given in Hodges, 1997.

The great danger, which leads to waste of funding, confusion, rivalry and minimum conservation is to imagine that animal projects can be organized centrally by officials in governments or in the UN agencies (Top-Down). Live animal conservation is a daily, hands-on job, perhaps with semen and embryos stored nearby. The idea of a Command Centre at FAO in Rome for operating farm animal conservation projects throughout the world is totally inappropriate. It may work with plant genetic conservation where some seeds can be stored centrally ex situ. On the other hand, FAO is indispensable to provide Top-Down Programme Infrastructures, the types of which are listed later in this paper.

Structure of This Paper

This paper now examines the history and prospects of farm animal conservation within the framework of the three normative stages of developing human projects described above and the Top-Down/Bottom-Up approaches. The paper follows this pattern.

The origin of the vision for farm animal conservation

A historic account of the origin of the Vision is given. It is assumed here that the Vision is accepted and needs no further justification. The role of NGOs as the first organizations to catch the vision is summarized.

Building technical and financial infrastructure for the farm animal conservation programme

The paper shows how the UN later caught the vision and moved into farm animal conservation. Actions by UNEP and FAO then rapidly built up a Technical Infrastructure. The list of the many FAO/UNEP publications which provide this Technical Infrastructure is given in FAO, 1990. The inability of FAO to provide a Financial Infrastructure for project implementation is noted. The impact of the
Convention on Biological Diversity upon funding local conservation projects is examined.

**Farm animal conservation project implementation at the local level**

The roles of FAO and national governments in empowering local people and NGOs in conserving farm animal bio-diversity is outlined showing that successful action still awaits international co-operation between the various parties.

**Origin of the vision for farm animal conservation**

The vision for farm animal conservation arose among thinking people who saw the coming monoculture of animal production. A very early visionary was the UK animal geneticist Ian Mason who began in the 1940s and 1950s to collect data on individual breeds in developing countries, also showing population statistics. Mason was, at that time, a solitary visionary who authored the first World Dictionary of Livestock Breeds, Types and Varieties in 1951 (latest 4th edition, 1996).

I recall hearing Mason speak in 1961 at a UK cattle breeders’ conference about the threat to biodiversity of breeds in developing countries. Live animal conservation was initiated in the UK in 1964 by another academic, Dr. I. Rowlands, who gathered small groups of domestic breeds in a zoo. In 1968 the first NGO for farm animal conservation was formed, also in the UK, the Rare Breeds Survival Trust, which started farm parks and conservation on individual farms. Much credit for this NGO initiative goes to Lawrence Alderson and his associates. He was also a leader in later forming Rare Breeds International (RBI) the International NGO that coordinates and supports national NGOs in their conservation activities. In the early 1960s also, the Milk Marketing Board of England and Wales, a farmers’ co-operative body, noted that some traditional breeds of British cattle were declining rapidly in numbers as the Holstein-Friesian grew to dominance. Cryo-conservation was used to save semen from threatened British breeds.

Thus, the vision came from individual thinkers, visionaries and people of action close to the ground in agriculture. Early pioneers also existed in some Developing Regions. The vision of farm animal conservation did NOT originate within the ranks of mainstream animal scientists; nor did it arise within the international development agencies like FAO who joined the conservation scene much later in the 1980s; nor did it arise primarily in national governments. Like so many creative ideas, the vision came from individuals. There was resistance. In the 1960s and 1970s, most animal scientists were locked into the paradigm of economic progress as the only value. Conservation of biodiversity was seen as uneconomic. The old-fashioned breeds of previous centuries were regarded as obsolete and many scientists argued that, in the name of progress, these breeds should be allowed to disappear.

FAO did not start a programme for animal genetic conservation until 1980. This is extraordinary as FAO had been advised by its expert consultations in the 1960s of the need to study adaptation and the relative merits of exotic and indigenous breeds in the tropics (see Payne and Hodges, 1997). The prevailing animal production policy within FAO throughout the 1960s and 1970s was to try to introduce temperate breeds with high genetic merit to the tropics. This philosophy is well illustrated by the FAO scheme, started in the 1970s, to donate Holstein-Friesian semen from the West to developing countries. The philosophy of increasing animal production in the tropics with temperate genes not only failed but also damaged indigenous breed resources (Payne and Hodges, 1997). On the other hand, the vision of conservation crept unnoticed into FAO in the 1970s when Ian Mason was appointed in FAO Rome in charge of animal breeding projects. In addition to his duties, he continued to build-up data on tropical breeds which, much
Building technical and financial infrastructure for the farm animal conservation programme

The conservation vision for farm animals, born in the 1960s, first moved onto the international stage at the UN Conference on the Environment in 1972 in Stockholm following which the United Nations Environment Programme (UNEP) was created. Some thought that UNEP was the appropriate UN organization to establish the farm animal conservation programme within its broad mandate for the environment. However, it was recognized that within the UN system FAO is the Specialized Agency with a technical brief for agriculture, especially to assist Governments of developing countries. Therefore UNEP and FAO started working together in the newly identified field of conserving agro-biodiversity. Their first joint activity was in 1980 when they held the FAO/UNEP Joint Inter-Governmental Consultation on Animal Genetic Resources in Rome (FAO, 1981) at which I was privileged to represent Canada. That 1980 Consultation moved the rationale for conservation from being a fringe topic onto the international agenda and recognition within animal science.

The Consultation recommended actions to Governments, to FAO and UNEP, to the private sector and to NGOs. Governments were asked to initiate and facilitate conservation programmes themselves and to encourage NGOs and others in the private sector. The Consultation called upon FAO and UNEP to provide Technical Infrastructures. These included scientifically sound techniques for identifying and conserving threatened breeds; training courses; collection of accurate information on breed characterizations; documentation of distribution of farm animal diversity throughout the world etc. Financial support for building this new Infrastructure was provided by UNEP. Thus, Phase Two of the Farm Animal Conservation Movement started in 1982.

FAO added the new Farm Animal Conservation Programme to the HQ Group of staff responsible for existing animal breeding development projects. I was privileged to lead this group in FAO Rome from 1982 to 1990. Our conservation activities were funded by UNEP while animal breeding activities continued within the FAO/UNDP funded programme. We were supported scientifically by the newly established worldwide FAO/UNEP Joint Expert Panel on Animal Genetic Resources which brought the enthusiasm and expertise of about 35 eminent scientists from developing and developed countries chaired by the sheep geneticist, the late Dr. Helen Newton-Turner from Australia.

Institutional environment within FAO in the 1980s

Although the mandate for farm animal conservation was given by the 1980 FAO/UNEP Consultation, actual progress is always influenced by the prevailing internal institutional environment. Thus, the first task was to explain the new ideas within FAO. The concept of “sustainable development” was not current in the early 1980s in development agriculture. We had to define the terms “preservation” and “conservation” for the first time in terms of domestic breeds. We had to explain that conservation and use are two sides of the same coin. These were new concepts. UN Specialized Agencies are slow-moving bodies. Policy-makers and Budget Directors within FAO had for years felt that the only legitimate business of FAO was to increase animal production. The funding from UNEP was the key to change as these funds were designated for animal conservation. A further stimulus was the fear within FAO that UNEP might take over FAO’s traditional role in agriculture through its environmental mandate within the UN.
The 1980s saw four specific issues arise within FAO which deeply affected the animal genetic conservation programme. They were sufficiently important to be mentioned briefly here relative to their impact upon the new programme for conservation of farm animal genetic resources.

1. Policy decision on animal genetic data and gene banks;
2. Controversy on plant genetic resources;
3. Conflict over FAO's regular programme budget;

Policy decision on animal genetic data and gene banks

A high level policy decision was made when I first arrived in FAO in 1982 not to establish a single global data centre nor a single cryogenic storage bank at FAO in Rome. Rather it was decided to provide the Technical Infrastructure as guidelines, training and scientific support for the establishment of regional and national data centres and gene banks in Africa, Asia, and Latin America. This policy decision was in line with our view that the role of FAO was to build infrastructure to support activities close to where conservation will occur.

Controversy on plant genetic resources

The development of FAO's Infrastructure Programme for farm animal conservation was complicated in the 1980s by the global plant genetic resource programme. The plant programme had been in operation for some years and the key body at that time was the International Bureau of Plant Genetic Resources (IBPGR) which was located within the FAO Plant Production and Protection Division in Rome. The FAO/UNEP 1980 Animal Consultation had proposed a comparable body within FAO to be called the International Bureau of Animal Genetic Resources. However, in the 1980s a political ferment erupted within the FAO Governing Bodies about plant breeders’ rights, farmers’ rights, ownership of seed banks and access to conserved stocks. Consequently, the Director-General of FAO decided that it was essential to consolidate the plant situation before starting any such comparable body for animals. That commotion on plants resulted in the formation in the 1980s of the FAO Commission and Undertaking on Plant Genetic Resources. Only recently has that body been reshaped to include Animal Genetic Diversity along with Plants.

Conflict over FAO's regular programme budget

In the 1980s the USA, which contributed nearly 25% of the FAO Regular Programme Budget, withheld its contributions for some years as a protest against the FAO management style. Within FAO it was impossible to gain new funds at that time and so we managed to continue our conservation mandate with the UNEP funds and by liaison with UNDP and bi-lateral donors. However our small staff resources were cut as these were supported from the FAO Regular Programme.

Convention on Biological Diversity

In 1988 a new feature appeared on the international landscape which affected the possibilities of funding for animal conservation projects. This was the proposal to bring the Convention on Biological Diversity (CBD) to the planned UN Conference on Environment and Development, UNCED, to be held in Rio de Janeiro in 1992 as the successor to the Stockholm Conference. This proposal had a large impact within FAO itself, one might even call it a conversion, to accept that conservation and improved use of animal genetic diversity are complementary. FAO was invited to the negotiating sessions in Geneva for the Convention on Biological Diversity and I was privileged to lead the FAO delegation. Conservation and sustainable development entered the FAO
Conservation of farm animal biodiversity

Creation of the technical infrastructure

During the 1980s the appropriate new Technical Infrastructure was created. Much of the technical work was done by consultant specialists on contract. The Technical Infrastructure and outline Global Programme was created as a knowledge base, discussed with leaders in developing countries, published, given to governments and used in many training courses for developing country leaders. The Technical Infrastructure was monitored by the FAO/ UNEP Joint Expert Panel and components are shown in Table 2.

Table 2. Components of Technical Infrastructure created by FAO from 1982-1990.

- Scientific criteria for defining breeds at risk;
- Sampling techniques;
- Conservation standards for declining populations;
- Cryogenic and live animal conservation methodologies;
- Regional networks of concerned scientists;
- Training programmes for developing country scientists;
- Collection, analysis, and publication of surveys of breeds in developing countries;
- Publication of the first comprehensive books on farm animal diversity of the USSR and China in UN languages;
- Design of animal genetic descriptors;
- Pilot national data banks and later regional data banks;
- Technical support and training to regional cryogenic gene banks;
- Provision of pilot funding and technical support to governments for national and regional conservation programmes;
- Publication of operating manuals;
- Guidelines for setting up live animal conservation projects;
- Promotion of study of biotechnology as a potential new tool for production and conservation;
- Establishment of contacts with the national and international organizations with interests, concerns and activities in conservation of agro-biodiversity and wild relatives of farm animals;
- Provision of technical support to Governments and NGOs wishing to start national or local conservation programmes;
- Publication of technical bulletins and launch of the new periodical Animal Genetic Resources Information;
- Regular consultation with the joint UNEP/ FAO Expert Panel.

project vocabulary. As a result, in 1989, one of the FAO Governing Bodies, the FAO Committee on Agriculture (COAG), spent a day considering the conservation and improved use of farm animals. They enthusiastically approved our Technical Infrastructure Programme and proposed seeking funds for Project Activity from the forthcoming Convention on Biological Diversity. One might say that animal genetic resources conservation had, at last, become respectable although Financial Infrastructure for the large-scale development of Projects would have to wait for the Convention (CBD) in 1992.
The creation of this FAO/UNEP Newsletter, Animal Genetic Resources Information (AGRI) opened a new communication channel between all engaged in animal conservation. It is amazing that only 20 years ago in 1982 all FAO communication to and from developing countries was by diplomatic mailbags with letters prepared on electric typewriters plus carbon copies. Urgent messages were sent and received by telex. In 1982 in FAO, there were no fax machines, no desk-top computers, no courier services, no email and of course no internet.

Important conservation activities in Europe, for which FAO has no mandate, were undertaken by the European Association for Animal Production (EAAP), an international NGO, which carried out and then repeating a European breed survey (Maijala et al., 1984). Then in 1988, EAAP established the European Animal Genetic Data Bank at Hannover, Germany. FAO cooperated with this European Data Bank Centre by sending developing country scientists there for training. EAAP subsequently published the information from the European Data Bank (Simon and Buchenauer, 1993). Later in the 1990s new leadership at FAO decided to establish a Global Data Bank for Animal Genetic Resources at Rome. The transfer of the European data to FAO Rome from the EAAP Data Bank in Hannover provided a good foundation together with the data from the regional data banks.

By 1990 therefore, FAO had successfully built a Technical Infrastructure on farm animal conservation, had established working relationships with the existing national programmes and had trained leaders in many developing countries. The missing factor was a Financial Infrastructure to fund national and local projects. All hopes were fixed upon obtaining finance from the Convention on Biological Diversity which was approved at Rio in 1992 and subsequently ratified by a significant number of governments who held their First Meeting of the Parties to the Convention in 1994 in The Bahamas (Hodges, 1995). This marked a new political and financial statement by governments which placed six billion US dollars for bioconservation. This fund offered – and still offers - a remarkable new possibility for financing the third and operational phase of the Conservation of Farm Animal Biodiversity to be undertaken as projects by national governments and by NGOs. The key features defined by the CBD to approve financial support for conservation projects in developing countries and in transition countries of Central and Eastern Europe are shown in Table 3.

The way was at last open for credible farm animal conservation projects to be funded. The intended route was for FAO, as the UN Specialized Agency, to provide national governments and NGOs with Technical Information and assistance in the design and

**Table 3. Specification by Convention on Biological Diversity for Project Funding.**

- Conservation of threatened indigenous breeds;
- Improved and sustainable food production;
- Enhancement of the quality of rural life;
- Conservation of the natural environment and resources used by farm animals;
- Recognition of the traditional life-styles and ownership rights of the indigenous people whose animals are to be conserved;
- Approval by the government as a part of a national strategy.
Conservation of farm animal biodiversity

format of project proposals for submission by governments to the Global Environmental Facility (GEF) which was established to administer the six billion US dollars funding. Governments clearly need help in preparing their project proposals as they are approved only when the project is well defined, technically competent and integrated into national and local needs. A major role of FAO is to help to prepare these project proposals. FAO has decades of experience in this task and has almost turned it into an art form in development programmes generally. Given approval, the project is then operated by the government or national NGO. GEF also earmarked a substantial amount of the funding for projects specifically designed and operated by NGOs with national government approval.

Regrettably, an alternative route was apparently followed. When the funding became available in 1994, FAO sought large funding directly from the GEF to support its own newly-created Global Programme of Animal Genetic Conservation (DADIS). This approach for funding was unsuccessful and the rejection can be well understood in the light of the historic developments described in this paper. The GEF and the governments providing the funds prefer to put their funds directly into projects rather than into the hands of an agency. There is always the problem of enthusiastic individuals within an Inter-Governmental Agency wanting to build an empire. But, the conservation of endangered farm animal diversity is essentially a field task to be carried out by those who live, work and use the farm animal diversity. The role of the UN Inter-Governmental Agencies like FAO is to provide technical infrastructures and to support projects submitted by governments for financial assistance. FAO had followed this pattern with projects funded by UNDP for decades. By contrast, no GEF funds had been awarded by 2000 for farm animal conservation projects, although about one billion US dollars remained available from this first CBD tranche (Personal communication, 2001).

This tragedy is recorded by FAO’s own documentation of erosion of biodiversity in farm animals. The World Watch List (Loftus and Scherf, 1st Edition, 1993), (Scherf, 2nd Edition, 1995, and 3rd Edition, 2000), which is a valuable publication, shows that between 1993 and 2000 the number of breeds at risk has increased. The vision for conservation has not been matched by action on the ground. FAO’s other technical publications show that, during the 1990s, attention within FAO was directed to further development of the scientific aspects of its own Global Programme for Domestic Animal Diversity rather than upon enabling and facilitating governments and NGOs to submit projects to GEF for funding.

Prospects for the future: Where is the cutting edge of animal conservation?

Conservation activities are well established in the developed regions where national NGOs and most governments have made excellent progress. Rare Breeds International (RBI) with its limited budget has successfully started some grass roots projects, as have creative private sources. Some larger developing countries for example, Brazil, China and India accepted the FAO Technical Infrastructure during the 1980s and, with their own funds, established national conservation projects.

Farm animal biodiversity now most at risk is in the poorer and least developed countries and in the newly Independent States (NIS) of the former Soviet Union. These countries are struggling with poverty and are most in need of external funding to start projects. The conservation needs of these countries can be addressed with funds from GEF and from international and bi-lateral donors provided the Governments and NGOs submit valid proposals. The current FAO project State of the World - Animal Genetic Resources (SoW-AnGR) is another move to document where there is most urgent need for project activity. However, the SoW-AnGR alone will not initiate conservation activities for it is basically another Top-Down approach. Unless FAO with its technical and project
formulation expertise moves alongside the governments and NGOs able to operate projects, the new information on declining biodiversity will simply remain as documentation. Meanwhile, farm animal biodiversity will be further depleted.

FAO, like all UN bodies, frequently loses its institutional memory by relatively frequent changes in staff. One of the purposes of this paper is to restore some of FAO’s lost institutional memory on the Conservation of Farm Animal Diversity. An effective future must be built upon knowledge of the past. Otherwise the same mistakes are repeated and work already done is duplicated.

We know there is a large fund of enthusiastic knowledge at the grass roots level. Live animal conservation can often be combined into integrated community projects, sustainable development programmes, quality food product systems, organic farming or agrotourism - and at less cost than high technology proposals. The urgent need is to equip and empower local people to gain funding for their animal conservation projects for animal genetic conservation through national or local NGOs working together with Governments. FAO alone, as the UN Specialized Agency, has the unique mandate to provide technical help in the design of conservation project proposals.

In summary, the view expressed in this paper is simple. The vision for conservation is clear. The technical knowledge on how to do it is available and there is minimum need to spend more time and resources on refining scientific techniques of conservation. We are in Phase Three of this great endeavour. The need is for Project Activities to be initiated, funded and supported. That is a Bottom-Up activity. It has been well demonstrated that such conservation projects cannot be implemented by a Top-Down approach.

References

Bible. Proverbs 29, verse 18. Where there is no vision the people perish.


Development of a Regional Focal Point for animal genetic resources: the European example

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Summary

This paper describes the process that lead to the creation of the European Regional Focal Point (ERFP). The action was suggested by the FAO Global Strategy (1995) aimed to assist countries to stop animal diversity erosion by helping them with a better use and preservation of their livestock resources.

In 1997, France accepted the responsibility of developing an ERFP though its Bureau des Ressources Génétiques (BRG). During the first year, the ERFP held meaningful discussions with the different European countries with the objective of finding a general agreement for an organisational structure as well as a medium-term work programme. The following step was settled during the Annual Meeting of the European Association for Animal Production (EAAP) in Warsaw where it was agreed that the new body had to have a light structure and respect national sovereignty regarding the AnGR.

In February 2000, following a difficult internal debate involving the establishment of a basic strategy and further steps, an enquiry was launched among the National Coordinators in order to have an overall picture and to evaluate the usefulness of the proposed organisation to be established. In 2000 during the 6th Workshop of the European NCs, the ERFP was created.

The new structure is based on

a) an Annual Meeting of National Focal Points;
b) a Steering Committee; and
c) a Secretariat to be elected among the National Focal Points to serve for a limited period.

Résumé

Cet article présente le processus qui a porté à la création des Points focaux régionaux européens (ERFP). L’action a été suggérée par la Stratégie mondiale de la FAO (1995) qui prévoit l’assistance aux pays pour empêcher l’érosion de la diversité animale en les aidant à mieux utiliser et préserver leurs ressources animales.

En 1997 la France a accepté la responsabilité de développer le ERFP à travers son Bureau des Ressources Génétiques (BRG). Pendant la première année le ERFP a maintenu d’importantes discussions avec les différents pays européens dans le but d’établir un accord général pour le développement d’une structure d’organisation ainsi que d’un programme à moyen terme. Le passage suivant a été réalisé pendant la Réunion annuelle de la Fédération européenne de zootechnie (FEZ) qui s’est tenue à Varsovie et où il a été accordé que cette nouvelle structure devait être flexible et dans le respect des AnGR existant dans chaque pays.

En février 2000, après un débat difficile au sujet de la stratégie de base et le futur immédiat, une enquête a été lancée auprès des Coordinateurs nationaux dans le but d’obtenir une vision globale et d’évaluer l’intérêt réel pour établir une organisation de ce genre.

Paper presented at the joint RBI/EAAP International Symposium on "Conservation, management and use of rare livestock genetic resources", held in Budapest on 23rd August 2001
En 2000 encore, pendant le 6ème Atelier européen des Coordonateurs nationaux, le ERF a été créé.
La nouvelle structure se base sur:
a) Une Réunion annuelle des Points focaux nationaux.
b) Un Comité directeur
c) Un Secrétariat élu parmi les Points focaux nationaux pour une période limitée.

**Keywords:** Global Strategy, Conservation, Europe.

**Introduction**

Since 1995, the FAO Global Strategy was developed to assist countries to halt erosion of animal diversity by helping the countries to use better and preserve their priceless resources. The setting up of the components of the Global Strategy is in hand. It remains still perfectly flexible.

The Global Strategy’s framework consists of four fundamental components with set of elements. Whilst elements may be reconfigured, the Strategy is designed to be comprehensive to emphasise the balance approach required to cost-effectively better understand, utilise and maintain animal genetic resources over time.

The Global Strategy’s four fundamental components are:

a. An intergovernmental mechanism involving the direct countries participation through centres and networks to assist countries design, implement and maintain comprehensive strategies for the management of their animal genetic resources. The need has been clearly demonstrated to distribute the focal points to at least three levels - country, regional and global.

b. A technical program of activity aimed at supporting effective management action at the country level, in harmony with the Convention on Biological Diversity (CBD).


d. An intergovernmental mechanism for direct government involvement, policy development and support and to maintain a national strategy adapted of the management of its own resources. This is provided by the Commission on Genetic Resources for Food and Agriculture (CGRFA).

For the implementation of the Global Strategy for Europe, FAO has closely collaborated with the EAAP (European Association for Animal Production). Created since a long time by EAAP, the existing networks were used by FAO. The relational aspects between the researchers, the various national and international organizations and all the animal genetic resources management actors were implied. In the field of the exchanges, many aspects were also implied mainly in the data processing from various countries. Collaboration between FAO and EAAP has been remarkable. It constitutes a fundamental difference between the Global Strategy set up in Europe and those carried out in other parts of the world.
History

In 1995, 37 European countries have responded to an invitation by FAO, nominated an institution as National Focal Point (NFP) and identified a national technical coordinator (NC). The NC serves as the point of contact for the country’s involvement in the Global Strategy and will assist in organising the essential in-country networking, facilitating and coordinating activity. This aspect is regarded as essential for a good coordination of the national activities. To ensure the country level has access to the necessary level of assistance and to best utilise the limited resources of the Global Focus, the planned coordination structure provides for decentralisation to the region level - Regional Focal Point (RFP) - is being implemented in each major genetic storehouse region of the world.

In 1997, France has kindly agreed to accept the responsibility of developing a Regional Focal Point for Europe through its Bureau des Ressources Génétiques (BRG). This would initially occur on an interim basis and for a period of one renewable year. During this period the RFP-Europe would have in depth discussions with the different European countries with the objectives to come to a consensus for an organisational structure together with medium-term work programme. The financial implications for an operational RFP-Europe as for the other technical activities were to be clearly identified and some proposals for the funding were to be made. In this work, the BRG received the strong assistance from the NFP of Poland which was a true relay for the various exchanges between the Eastern European countries.

In 1998, in order to continue this set-up, a strong option was taken during the Warsaw meeting. First, only one RFP for Europe must be able to meet the various countries needs, but this solution must take care not to stop during the following evolutions. This RFP should have a light organisational structure taking into account the relatively weak means, which could be devoted by a majority of the countries. During this first period, which could last 3 or 4 years, wisely, the majority of the countries did not want to give to the RFP a fundamental role in the decision-making processes. In the field of the farm animals genetic resources management, the decisions aiming at the conservation or the use of these resources must a national responsibility. However, this solution does not exclude a strong need for an international co-operation at the political and technical level.

Keeping in mind, these two basic considerations:
• set up a light structure in order to support important and future evolution,
• respect of national sovereignty in the farm animals genetic resources management and the free adhesion of the countries at this co-ordinating structure;

It should be possible to create a RFP ensuring a platform to exchange experiments and information in the field of the farm animals genetic resources management. Having a regard for the national differences, it is necessary, for economic reasons, this RFP can provide technical councils or supports in common fields. All countries should participate in these exchanges where totality of the actors who act at the local level, regional or international and from governmental or non-governmental organizations, is requested.

France was asked to continue to act as the temporary RFP Europe for one more year. During the 5th workshop for the European National Co-ordinators (NCs) for the management of Farm Animal Genetic Resources (FAnGR) in Zurich (1999), an agreement could not be made between the different European countries to allow the creation. However, a new step was reached: the European countries recognized that it was not possible to establish an ERFP by a time-limited project. No formal or informal structure could continue the required work at European level. France did not have any mandate to act as the temporary ERFP.
However, it was difficult to conclude with a failure for this Zurich Workshop and the end of the ERFP set up to stimulate exchanges and dialogue between countries in the field of Farm Animal Genetic Resources (FAnGR). That is why, a small group of countries under the sponsorship of EAAP and FAO wished to carry on this work. They asked the French national coordinator to organize a vote among all the NCs in order to have an overall picture and to evaluate the usefulness of the proposed organisation with sufficient precision.

During this new process, the first objective was to set a voting to know the countries position concerning the ERFP creation. The first circular was sent on September 27, 1999. It proposed a vote on an “idea” or on a starting point for next fruitful discussions.

There were four main points in this proposal.
- General objectives of a European Co-ordination and benefits to be expected.
- Co-ordination ensured by one NC, based on a light structure.
- Funding provided by a dedicated trust fund financially managed and fully edited by EAAP (Rome).
- The French NFP offers to take this co-ordination in charge for a period of 4 years renewable – under the control of the annual NCs workshop.

The results were published in February 2000.
- Thirty-seven contacted countries.
- Twenty-three answers.
- One country was against this proposal.
- Two countries require more time for governmental discussions.
- One country accepts partially.
- Nineteen countries accepted this proposal.

In addition, four countries (U.K., Switzerland, Italy, France) were ready to finance a part of ERFP actions if ten countries joined this international will for collaborating.

In 2000, during the 6th Workshop for the European NCs, the ERFP was created. After three years discussions, it appeared that a light organisational structure and a simple and country driven functional structure could ensure the sustainability of a ERFP.

**Terms of Reference for the ERFP**

ERFP is to be established in the framework of FAO’s Global Strategy on Animal Genetic Resources to serve the following needs:
- To assist and enhance the AnGR activities of National Focal Points (NFPs) at the European level and to assist in co-ordinating those activities within and between other European organisations such as the EU and the CEE.
- To develop and maintain regular contact and exchange of relevant information on AnGR horizontally among European NFPs and vertically with the Global Focal Point in Rome within FAO’s agreed global structure.
- To stimulate the funding and organisation of regional projects, workshops and national programmes on AnGR within the European Region.
- To stimulate and co-ordinate the maintenance and further development of national databases within the European Region and encourage European information networking on AnGR.

Its structure is based on:

1) **Annual Meeting of National Focal Points**
- to bring together all NCs of FAO’s European Region annually and normally chaired by the host country;
- to exchange information on relevant national and sub-regional activities;
- to decide on the ERFP budget, the general rules of the annual meeting, ERFP Steering Committee and Secretariat and the future activities of the ERFP;
- to elect the Secretariat NFP and the Steering Committee;
- to be advised by technical (e.g. EAAP) political (e.g. EU Commission) and organisational (e.g. FAO Global Focal Point) experts as appropriate.
2) Steering Committee

- to consist of members elected from among the NCs (initially 5 members including representatives of each of the European sub-regions). The preliminary Steering Committee will consist of the NCs of France Greece, the Netherlands, Poland and the UK (Chair) for one year from August 2000;
- to plan or execute activities of the ERFP as decided upon by the Annual Meeting of NFPs;
- to represent the ERFP in contact with other institutions under the mandate of the Annual Meeting;
- to ensure that decisions with financial implications are not taken against the majority of countries that regularly fund the ERFP.

3) Secretariat

- to be elected from among the NFPs to serve for a limited period. France has agreed to serve for the first 4 years;
- to be headed by an executive officer of the elected NFP (usually the NC);
- to organise the Annual Meeting of the NFPs;
- to give secretarial support to the Steering Committee of the ERFP;
- to execute decisions or support projects decided on by the Annual Meeting or Steering Committee;
- to distribute relevant information on AnGR to and from NFPs and pass on information from within the FAO global network using newsletters/email/internet homepage etc.

The ERFP is funded through financial contributions made by donor countries placed in a Trust Fund administered by the Steering Committee through the Secretariat but held by and fully audited by the European Association of Animal Production (EAAP). These funds cover basic additional costs of the Secretariat (time, communications, travel) when engaged on ERFP business, the Steering Committee and any costs for specific activities approved by the Annual Meeting.

Donors for specific programmes or projects co-ordinated by the ERFP may also make voluntary additional financial contributions.

The hosting country of the ERFP Secretariat will be expected to cover the overhead costs of office accommodation, administrative and clerical staff and communications equipment.

For the ERFP to be created, at least 10 donor European Countries must contribute to the Trust Fund a maximum of Euro 10 000 per annum each for the first 4 years to meet the budgeted costs.

Conclusion

The ERFP is now operational. To date, 10 countries decided to support the ERFP (Czech Republic, France, Germany, Greece, Ireland, Italy, Netherlands, Spain, Switzerland, United Kingdom). Now, many countries are convinced that the ERFP is important for the reliable management of AnGR in Europe. Important problems start to come up. With the ERFP, the countries can be better armed for them.
Establishing a National Focal Point for farm animal genetic resources in South Africa

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Summary

The recent call from FAO to take part in the process of preparing the First Report on the State of the World Animal Genetic Resources (SoW) stressed the need to develop management capacity at country level to facilitate the preparation of country reports (CRs). A key role is played by the National Focal Points (NFPs) and the National Coordinators (NCs).

A national workshop was held in South Africa in 1998 and a National Committee for Farm Animal Genetic Resources (FanGR) was established. The existing Indigenous Livestock Committee was reviewed and adapted to make it more focused on the management of FAnGR. At the same time a National Coordinator was also identified and the Animal Improvement Institute was nominated as national coordinating institute for FAnGR.

The collaboration with some NGOs was strongly suggested, particularly with:

a) the Farm Animal Conservation Trust (FACT), to assist with the conservation of farm animal genetic resources. This NGO was modelled on the Rare Breeds Survival Trust (RBST) in the United Kingdom and on Rare Breeds International (RBI)

b) The South African Stud Book and Livestock Improvement Association (SASB) and

c) many Rural Communities and National and Provincial animal genetic resource centres

The institutional frame for AnGR conservation in South Africa is briefly described, together with the aims of the South African conservation activities.

Résumé

Le récent appel lancé par la FAO pour prendre part au process de préparation du Premier Rapport sur la Situation mondiale des ressources génétiques animales (SoW) a souligné la nécessité de développer les capacités de gestion au niveau national pour faciliter la préparation du rapport national (RN). Les Points focaux nationaux et les Coordonnateurs nationaux jouent un rôle important dans process.

Un atelier national a été tenu en Afrique du Sud en 1998 suit auquel un Comité national pour les ressources génétiques animales (FanGR) a été établi. Le Comité pour les races indigènes a été revu et adapté afin de l’orienter vers la gestion des FanGR. Au même moment, un Coordinateur national a été nomé et le Animal Improvement Institute est devenu l’institut de coordination pour les FanGR.

On suggère vivement la collaboration avec certaines ONG, en particulier:

a) le Fonds pour la conservation des animaux d’élevages (FACT), pour aider à la conservation des ressources génétiques

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* Paper presented at the joint RBI/EAAP International Symposium on “Conservation, management and use of rare livestock genetic resources”, held in Budapest on 23rd August 2001
A Regional Focal Point for AnGR: the South Africa example

Keywords: National Advisory Committee, Stakeholders, NGO, Rural communities.

Introduction

Recent global concerns on the loss of diversity of farm animal genetic resources have led to renewed initiatives to identify, characterize and conserve animals that were once considered inferior to more conventional international breeds.

The future of these breeds is often dependent on their economic value, either as pure breeds or as a source of genetic material with traits such as disease and parasite tolerance and general hardiness.

Characterizing breeds, investigating value added traits and developing products and markets all contribute towards the value adding and information process.

To be effective, information must flow to all levels and genetic material must be available to all levels as well.

Where a breed has no immediate economic value, it needs to be conserved for possible later use and where a breed is endangered, all efforts should be made to preserve it and increase numbers.

These actions are often key elements of breed conservation initiatives, the success of which is largely dependent on effective coordination and public sector support. Past failures have often been due to fragmentation and a lack of focus, hence the need to have a focal point at National and regional level.

The recent invitation from FAO to all countries to participate in the process of preparing the first report on the State of the Worlds Animal Genetic Resources (SoW) highlighted the need to develop management capacity at country level to facilitate the drafting of Country Reports. Those countries with established structures for the management of Farm Animal Genetic Resources (FAnGR) have been in the fortunate position of having the basic framework needed for this process and central to this has been the existence of National Focal Points (NFP’s).

Initial FAO communications on the management of FAnGR often included the following statements:

“Successful global management must be country-led and sound programmes of management must involve all stakeholders”

“ To take full advantage of FAO’s Global Strategy, countries must appoint an institution as a National Focal Point and identify a technical coordinator”

While a number of effective National Focal Points (NFP’s) have been established, the general principles and procedures could be useful for the many countries in the process of developing local capacity to manage FAnGR and could also be useful in setting up the structures needed to draft country reports as part of the SOW process.

The Global strategy for the Management of FAnGR listed the following key objectives:

- Establish a national focal point (NFP) and a National Coordinator (NC).
- Train and support these coordinators.
- Establish regional focal points to work closely with national focal points.
- Develop basic guidelines, protocols and tool kits to assist countries to establish their own cost-effective management strategies.
- Conduct sub-regional missions to facilitate collaborative action.
- Conduct donors meetings to facilitate funding.
- Preparation of intergovernmental mechanisms for AnGR.
- Develop the Domestic Animal Diversity Information System (DAD-IS).
- Promote the *in situ* use of adapted genetic resources and *in situ* and *ex situ* conservation of unique resources currently not in demand.
- Coordinate and Facilitate the general and genetic characterization of AnGR.
- Develop a supportive communications network.
- Use technical expertise around the world to maximize cost-effectiveness.
- Report on progress with the implementation of the strategy.
- Assist with policy development for wise use and benefit sharing.

Many of these objectives can be used as guidelines for general terms of reference for National Focal Points (NFP’s). They also serve to illustrate the range of activities.

## Developing Management Capacity at Country Level

The initial process of establishing a NFP is fairly straightforward. It includes the following:

- Identifying and enabling a National Coordinator.
- Establishing a National Advisory Committee (NAC) for FAnGR with the necessary technical and practical skills and experience to advise and lead where necessary.

Supportive legislation is of critical importance. This may often determine the degree of acceptance of the NAC at local, provincial and National level.

### Who should serve on a National Advisory Committee?

- Government – AnGR and Animal health.
- Universities with relevant faculties.
  - Industry (beef, dairy, mutton, wool, poultry, ostrich etc.).
- National Animal Recording schemes.
- Breed Conservation NGO’s.
- Relevant research institutes.
- The traditional livestock sector (Indigenous peoples knowledge).
- The AI and embryo industry.
- The pedigree livestock industry.
- Independent breed conservation and animal breeding specialists.

### Location of a NFP

As policy is involved, it may be advisable to locate the NFP in the relevant Government Department or Government Institute, usually the National Department of Agriculture or research institute. This facilitates two-way communication between the NAC and policy makers.

It is equally important to obtain formal recognition for the NAC to ensure that advice will be accepted and acted upon. This is of particular importance where emergency conservation actions are called for. This would include the conservation of non-infected herds and flocks during outbreaks of diseases such as Foot and Mouth Disease (FMD).

### Reviewing existing structures and supportive legislation: The South African situation

When the initial FAnGR ‘challenge’ was issued, South Africa had existing structures and support services that included the following:

- Livestock Improvement legislation.
- National animal recording and improvement schemes.
A Regional Focal Point for AnGR: the South Africa example

- An indigenous livestock committee that included representatives from the Communal sector, Provinces, Universities and the research sector.
- An advisory board for animal production, established in terms of National legislation.
- An established pedigree livestock industry with a National herd book, SA Stud Book.
- An established conservation NGO.
- An Agricultural research council with a commitment to the conservation of FAnGR.
- Support from the National Department of Agriculture, the National Cultural History Museum and the ARC Animal Improvement Institute.
- Legislation had recently been reviewed to include aspects of FAnGR.

Many countries may have similar structures, supportive services and legislation. By reviewing the situation, it may be possible to adapt existing infrastructure with relatively minimal costs. These structures may also be more acceptable to local stockowners.

National workshop

A National workshop was held as early as 1998 and a committee for FAnGR was established.

It was therefore not necessary to ‘reinvent the wheel’ when establishing the basic infrastructure for a National focal point.

The existing indigenous livestock committee was reviewed and adapted to make it more focused on the management of FAnGR.

A National coordinator was also identified and it was decided to split the functions by using the Animal Improvement Institute as the National coordinating institute for FAnGR. Figure 1 illustrates this basic framework.

Figure 1. The basic framework of the national focal point in South Africa.
The importance of effective communication as a first step

The development of an effective communication network – both locally, regionally and internationally is a critical success factor that must run parallel with the other initiatives. It is essential to have established communication links with all the major stakeholder groups. This should include electronic communication between NAC members. A link to DAD-is should be established in the NC office and links to International bodies such as RBI, SAVE, ALBC etc. are highly recommended.

Some Key Stakeholders

Breed Conservation NGO’s

South Africa has used a NGO, the Farm Animal Conservation Trust (FACT) - to assist with the conservation of farm animal genetic resources for the past six years. This NGO was modeled on the Rare Breeds Survival Trust (RBST) in the United Kingdom and on Rare Breeds International (RBI).

RBST and RBI structures and objectives were adapted for local use, without compromising the basic principle of conservation through sustainable use.

Guidelines for establishing breed conservation NGO’s are available from RBI.

FACT is an active partner in a National initiative to create awareness and markets and to add value to endangered and indigenous breeds. This partnership includes the National Department of Agriculture, the Agricultural Research Council, the National Cultural History Museum and Universities.

FACT activities include the preparation and distribution of farmer friendly information on lesser known and endangered farm animals and facilitating conservation through the sustainable use of these breeds in commercial farming systems.

National registration/herd book organizations

The South African Stud Book and Livestock Improvement Association (SASB) is an Association of 60 livestock- and animal breeders’ societies and their members. In terms of its constitution the aims of the organization are, amongst other things, to:

- Encourage and promote the breeding, conservation and genetic improvement of the production potential of animals under its jurisdiction.
- Keep records of the pedigrees, production and performance of animals and issue certificates of registration and recording for such animals.
- Safeguard and advance the collective interests of stud breeders and their breeders’ societies and act as a mouthpiece for the stud breeding industry.
- Represent the collective interest of animal breeders and their societies on various national and international bodies and forums.
- Render technical and advisory services to breeders’ societies, their members and participants in the Integrated Registration and Genetic Information System (INTERGIS).
- Promote the export of animals with pedigrees registered or recorded with the Association, and of semen, ova or embryos from animals thus registered or recorded.

Rural communities: Indigenous peoples knowledge

Many rural communities still have large areas under communal land tenure. In the past, reasons for keeping animals, along with the intricacies of communal land tenure and traditional herd structures were often seen as barriers hampering progress. Many efforts were made to ‘improve’ animals that were, in fact better suited to the total production environment than exotic alternatives, often introduced at the expense of local breeds. Failure to understand and
appreciate the complexity of livestock ownership and to incorporate traditional knowledge and experience in animal production systems in rural areas almost led to the disappearance of a number of economically important breeds and those involved in the promotion of sustainable farm systems in developing areas are now faced with the challenge of reversing years of negative extension. Despite this, however, it is this sector that often has the biggest potential to conserve through sustainable use.

**National and provincial animal genetic resource centers**

An awareness of the value of indigenous cattle, sheep and goats led to the establishment of a number of National facilities to multiply and improve specific breeds and ecotypes. At the facilities serving the commercial sector, more attention was given to the improvement of breeds such as the Boer goat, Afrikaner sheep and Afrikaner cattle and the development of product-orientated composites.

The facilities serving the developing sector concentrated on Nguni cattle ecotypes, Pedi sheep and local unimproved goats. Some of these facilities face closure due to financial constraints and it is here that the NAC could play a major role in convincing the authorities to maintain these centers as a matter of National importance

**National agricultural research institutes**

Some research institutes may have mandates to investigate and develop the genetic potential of breeds and to conserve less useful breeds. As such, they are key stakeholders with the potential to serve as Focal points or Coordinating institutes. Close ties should be established and maintained.

**National museums**

Some Institutions have a mandate to establish and maintain living museums. In South Africa’s case, the National Cultural History Museum had the necessary infrastructure at an Agricultural Museum close to Pretoria. The Museum played a major role in the establishment of the local breed conservation NGO, FACT and remains a major supporter.

Facilities at the Museum were also used for a number of meetings and workshops, including the initial workshop to establish a NAC for FAnGR.

**Making the best of existing institutional support for the management of FAnGR**

Institutional support for the conservation and sustainable use of FAnGR in South Africa includes the following:

- The establishment of breeding and improvement schemes.
- Supportive research at research and development centres in the main production areas.
- The establishment of animal recording and evaluation schemes.
- Information/Extension on all aspects of animal husbandry.
- Regulations to monitor/control the importation and exportation of genetic material.
- Support to establish and maintain a central integrated registration and genetic information system.

By focussing and co-ordinating activities, the following actions were initiated. This serves to illustrate the way in which a NFP
could assist with the facilitation of breed conservation initiatives and policy formulation.

- Early breed surveys
- Establishing breeding units for indigenous breeds
- Support for the establishment of a conservation NGO, linked to international conservation bodies
- Liaison with the FAO and links to the FAO initiative on Domestic animal Diversity
- Revised legislation to control the exportation genetic material from indigenous and locally developed breeds.
- The implementation of biological impact studies to evaluate any proposed introductions of new breeds.
- New legislation to align South Africa with regional and international breed conservation and improvement initiatives.

Concluding Remarks

While this paper may appear to be fragmented, as far as some of the discussions are concerned, the purpose was to illustrate the range of activities in the management of FAnGR and the subsequent need for a focussed and co-ordinated approach.

Establishing a NFP is fairly straightforward and many countries already have the basic ingredients in the form of legislation, national facilities and a wide range of stakeholders.

While each individual situation will differ, the following basic procedures can be used to establish an effective NFP:

1. Review all existing structures for the management of FAnGR and the subsequent need for a focussed and co-ordinated approach.
2. Identify existing and potential role players and stakeholders and hold a National workshop to establish both a NAC and a system of communication
3. Identify a suitable NC – and ratify this appointment
4. Establish a NFP – with the full support of National and local government
5. Develop and establish a communication network
6. Consider establishing a breed conservation NGO where no such structure exists
7. Review existing and relevant legislation (A task that could be given to the NAC)

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FAO. 1999. Taking up the management challenge for animal genetic resources. Initiative for domestic animal diversity, Rome, Italy.
Summary

The Ongole cattle breed, also known as Nellore, is the native of the coastal districts Guntur, Prakasham and Nellore of Andhra Pradesh. This is a dual-purpose breed. Bullocks are very powerful and suitable for ploughing and cart pulling. These animals are resistant to various insect-born diseases. The coat colour of Ongoles is glossy white but some males have grey markings on their hump and grey markings on the back quarters have also been noticed. The animals of this breed are heavy having long/large ears, dewlap, hump, limbs and barrel. The size of a tail, neck and horns is in general short. Ears are alert with a moderately short black tip. Horns are short and stumpy. The dewlap is large, fan shaped, fleshy and slightly pendulous. The udder is well formed with well-placed and developed teats. A survey was conducted in 60 villages in the breeding tract and 7,341 cattle true to the breed (Ongole) type were found. A genetic improvement/conservation programme for Ongoles is being executed by the Indian Council of Agricultural Research in collaboration with Acharya N.G. Ranga Agricultural University, Hyderabad (Andhra Pradesh). The progress of the programme was presented.

Resumen

La raza vacuna Ongole, también conocida como Nellore, es nativa de la zona de la costa de los distritos de Guntur, Prakasham y Nellore en la región de Andhra Pradesh. Se trata de una raza a doble propósito. Los machos castrados son poderosos y apropiados para el arado y la tracción. Estos animales son resistentes a varias enfermedades transmitidas por insectos. El manto de la raza Ongole es mayormente blanco pero en algunos machos se observan manchas grises en la parte superior y en ocasiones se han observado también dichas manchas en el cuarto trasero. Son animales de peso elevado con largas y anchas orejas, papada, joroba, y extremidades. El rabo, el cuello y los cuernos son en general cortos. Las orejas se presentan erectas con las puntas ligeramente negras. La papada se presenta amplia, flácida y ligeramente colgante. Las ubres están bien formadas y colocadas. Una encuesta fue llevada a cabo en 60 poblados en la zona originaria y se encontraron 7,341 animales puros pertenecientes a la raza Ongole. El Indian Council of Agricultural Research está realizando un programa de mejora/conservación de la raza en colaboración con Acharya N.G. Ranga Agricultural University en Hyderabad (región de Andhra Pradesh). En este artículo se presentan los progresos alcanzados hasta la fecha por el programa.

Keywords: Physical and genetic characteristics, Conformation traits, Statistics, Production and reproduction performance.
Ongole cattle in India

Introduction

The Ongole cattle breed, also known as Nellore, is the native of the coastal districts Guntur, Prakasham and Nellore of Andhra Pradesh (Figure 1). The districts of Kurnool, Cuddapah and part of Mahabubnagar form the rearing tracts where bull calves after weaning are taken and reared till maturity and trained for farm work. The breed has been developed in the deltas of the rivers Penna, Krishna and Godawari, on the east coast of the Peninsular under the selection and patronage of farmers in these areas.

The best draught animals of this breed were developed between the south of the river Krishna and north of river Penna (Arora and Garg, 1997). The best milk-producing animals were developed in the deltas of the river Godavari. The animals of this breed have also been transported to many tropical countries of America, West Indies, South East Asia and Australia and have earned international recognition for its better survival and performance on tropical pastures.

Physical Characteristics

The coat colour of Ongoles is glossy white (Figure 2 and 3) but some males with grey markings on the hump and back quarters have also been noticed. Calves are generally white but sometimes are born with reddish brown patches (Figure 4). The muzzle is black with wide nostrils. The animals of this breed are heavy having long/large ears, dewlap, hump, limbs and barrel. The size of tail, neck and horns is in general short. Ears are alert with a moderately short black tip. Horns are short and stumpy. The dewlap is large, fan shaped, fleshy and slightly pendulous. The udder is well formed with well-placed and developed teats. These animals are famous for adaptability to heat stress due to development of large dewlap forming folds and skin with sweat spores covered by short shining and smooth hairs. This is a dual-purpose breed. Bullocks are very powerful and suitable for the ploughing and cart pulling. These animals are also resistant to various insect-born diseases.

Population Statistics

India possesses about 200 million cattle out of which 12 million are crossbreds (Dairy India, 1997). Cattle population of Andhra Pradesh is about 12.5 million including 0.4 million crossbreds. A breed-wise census has not been conducted in India to date. However, the Livestock Research Station, Lam, Guntur (Andhra Pradesh) has recently conducted a survey under the Network Project of the National Bureau of Animal Genetic Resources, Karnal (Indian Council of Agricultural Research). A survey was conducted in 60 villages in the breeding tract and 7,341 cattle true to the breed (Ongole) type were found (Annual Report of National Bureau of Animal Genetic Resources, 1998-99). The average number of cattle reared
by each farmer was 4.7. Table 1 summarises statistics and performance of Ongole cows under network project.

### Topography and Management

The Ongole breed is found within 14°.27' to 16°.8' N latitude and 80°.02' to 80°.29' E longitude at an average height of 600 feet above sea level. The average annual rainfall in the breeding tract varies from 40 to 100 cm in different seasons and temperature reaches 45°C in summer. Ongole cattle are mainly reared by farmers of a higher income group. The majority of the animals are reared under open type housing at night and put out to graze for the entire day. Natural mating is

<table>
<thead>
<tr>
<th>S. N.</th>
<th>Characteristic</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Female population</td>
<td>789</td>
</tr>
<tr>
<td>2.</td>
<td>Breedable females</td>
<td>475</td>
</tr>
<tr>
<td>3.</td>
<td>Bulls (breeding ± young)</td>
<td>15 (15+0)</td>
</tr>
<tr>
<td>4.</td>
<td>Mortality</td>
<td>3.8%</td>
</tr>
<tr>
<td>5.</td>
<td>Highest mortality</td>
<td>Due to Pneumo- Enteritis 21%</td>
</tr>
<tr>
<td>6.</td>
<td>Calving abnormality</td>
<td>7.6%</td>
</tr>
<tr>
<td>7.</td>
<td>Chief cause of calving abnormality</td>
<td>Retention of placenta 55%</td>
</tr>
<tr>
<td>8.</td>
<td>Conception rate (%)</td>
<td>Heifers 46 Cows 54</td>
</tr>
<tr>
<td>9.</td>
<td>No. of insemination/ conception</td>
<td>1.9</td>
</tr>
</tbody>
</table>
used in the whole breeding tract of the breed except at the University/State Government farms and their surrounding areas.

Research and Development

The Project Directorate on Cattle, Meerut, Uttar Pradesh, India (Indian Council of Agricultural Research) initiated a Genetic Improvement Programme in Ongoles in collaboration with the Livestock Research Station, Lam, Guntur, Andhra Pradesh (Acharya N G Ranga Agricultural University, Hyderabad) during 1987. The programme aims at associating the existing organized farms maintaining the Ongole breed under State/ Central Government, ICAR Institutes and State Agricultural Universities into a network programme for undertaking progeny testing of bulls, their selection on the basis of progeny performance for milk and draught and production of superior germplasm for utilization in cattle development programmes.

Statistics, Mortality and Calving Abnormality

Female herd (Figure 5) strength in the network project was 789 at the end of the year as a result of 138 normal calvings and 289 disposals (153 surplus, 20 auction, 59 reproductive disorders, 28 weak and 29 deaths). Population of breeding females at the end of the year was 475. A total of 15 breeding bulls was also available on the closing date. Overall mortality at the Ongole unit was very low (3.8 percent). Highest mortality was reported due to Pneumo-Enteritis (21 percent) among all the major diseases. The lowest mortality on the farm revealed that the animals of this breed are very resistant to various diseases. A few cases of calving abnormality were also observed at different centres (7.6 percent). The main cause of calving abnormality was retention of placenta (55 percent).

Figure 3. An Ongole bull.
Fertility Status

The overall conception rate in heifers and cows was low (46 and 54 percent). The average number of inseminations/conception was 1.86. Twenty-four bulls were inducted under the test mating in three sets of eight each. Nine hundred and thirty-nine daughters have so far been produced from the three sets. Daughters of the first set will complete their first lactation which will be the source for evaluation of genetic worth of the bulls. More than 66,000 doses of semen of test bulls were available on the closing date.

Conformation Traits

Weight at birth and at 24 months averaged 26 and 237 kg, respectively. Males were heavier than females (Table 2). Birth weight in the present study was similar to that reported by Krishna et al. (1970). However, body weight at two years of age was lower than that reported in literature (Joshi and Phillips, 1953). This reveals that adult body weight has been declining in the last decades and needs special attention. Average body height at birth and at 24 months was 72 and 128 cm, respectively. Males had higher body height as compared to females. Heart girth averaged 68 cm at birth and 144 cm at 24 months of age. It was also higher in males than females. Average body length at birth and 24 months was 61 and 124 cm, respectively.

Table 2. Conformation characters in Ongoles under network project.

<table>
<thead>
<tr>
<th>Character</th>
<th>Sex</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body weight at birth (kg)</td>
<td>Male</td>
<td>27.1±0.2</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>25.3±0.3</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>26.2±0.7</td>
</tr>
<tr>
<td>Body weight at 24 months (kg)</td>
<td>Male</td>
<td>302.0±8.8</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>223.9±3.6</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>237.2±6.4</td>
</tr>
<tr>
<td>Body height at birth (cm)</td>
<td>Male</td>
<td>72.8±0.6</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>71.6±0.6</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>72.2±0.9</td>
</tr>
<tr>
<td>Body height at 24 months (cm)</td>
<td>Male</td>
<td>135.2±1.4</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>126.8±0.9</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>128.3±0.5</td>
</tr>
<tr>
<td>Heart girth at birth (cm)</td>
<td>Male</td>
<td>68.6±0.4</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>67.0±0.7</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>67.8±0.7</td>
</tr>
<tr>
<td>Heart girth at 24 months (cm)</td>
<td>Male</td>
<td>155.1±1.9</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>141.1±1.2</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>143.7±0.7</td>
</tr>
<tr>
<td>Body length at birth (cm)</td>
<td>Male</td>
<td>60.7±0.7</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>60.6±0.3</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>60.67±0.9</td>
</tr>
<tr>
<td>Body length at 24 months (cm)</td>
<td>Male</td>
<td>130.2±2.1</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>122.0±1.1</td>
</tr>
<tr>
<td></td>
<td>Both</td>
<td>123.5±1.2</td>
</tr>
</tbody>
</table>
Table 3. Production and reproduction characters in Ongoles under network project.

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Character</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cows (%) in milk</td>
<td>41.6</td>
</tr>
<tr>
<td>2.</td>
<td>Wet average (kg)</td>
<td>2.8±0.0</td>
</tr>
<tr>
<td>3.</td>
<td>Herd average (kg)</td>
<td>1.2±0.0</td>
</tr>
<tr>
<td>4.</td>
<td>Age at 1st calving (months)</td>
<td>52.7±5.9</td>
</tr>
<tr>
<td>5.</td>
<td>First lactation yield (kg)</td>
<td>584±30.4</td>
</tr>
<tr>
<td>6.</td>
<td>300 days lactation yield (kg)</td>
<td>675±35.2</td>
</tr>
<tr>
<td>7.</td>
<td>Lactation length (days)</td>
<td>231±15.9</td>
</tr>
<tr>
<td>8.</td>
<td>Dry period (days)</td>
<td>289±22.2</td>
</tr>
<tr>
<td>9.</td>
<td>Service period (days)</td>
<td>203±12.2</td>
</tr>
<tr>
<td>10.</td>
<td>Calving interval (days)</td>
<td>502±18.2</td>
</tr>
<tr>
<td>11.</td>
<td>Peak yield (kg/ day)</td>
<td>3.8±0.1</td>
</tr>
<tr>
<td>12.</td>
<td>Fat %</td>
<td>4.4±0.4</td>
</tr>
<tr>
<td>13.</td>
<td>Total solids %</td>
<td>12.9±0.6</td>
</tr>
<tr>
<td>14.</td>
<td>Solids-not-fat %</td>
<td>8.5±0.5</td>
</tr>
</tbody>
</table>

Production and Reproduction Performance

Forty-two percent of cows was in milk throughout the year and yielded 2.8 kg wet and 1.2 kg herd average. Table 3 show that the proportion of milk and dry cows is lower than the optimum (70:30). This needs to be improved. Furthermore, the effective selection programme has not been implemented on the farms to increase the milk yield. Average age at first calving was 53 months. Age at first calving was reported between 39 and 42 months in the previous literature (Rao, 1966; Acharya and Bhat, 1984; Bhat and
This further revealed the poor growth of the heifers and as a result increases in age at first calving. This suggests that management practices need to be improved in order to reduce age at first calving.

First lactation milk yield averaged 584 kg. Per lactation yield in 300 days was 675 kg. Average lactation length and peak yield were 231 days and 3.8 kg, respectively. Average lactation yield and length were similar to those reported by Bhat (1977) and Katpatal (1979). Dry period, service period and calving interval averaged 289, 203 and 502 days, respectively. Rao (1966) also reported the service period in Ongole cows as 210 days, which is almost similar to the present study. Average fat, total solids and solids-not-fat percentage was 4.4, 12.9 and 8.5, respectively. These values corroborated with the findings of Katpatal (1979).

Genetic Parameters

Heritability of lactation length, 305 days milk yield and service period were high and ranged between 0.43±0.24 to 0.51±0.25 revealing relatively high genetic variation in the traits. Peak yield (0.48±0.23), days taken to peak (0.43±0.23) and age at first calving (0.58±0.25) also had high heritability estimates. These results suggest that selection with optimum intensity might bring reasonable genetic improvement in the performance traits.

Age at first calving had high negative genetic correlation with 305 days milk yield (-0.73±0.02), medium negative with peak yield (-0.48±0.17) and medium positive with lactation length (0.41±0.15). Genetic correlation of the service period was negatively high with 305 days milk yield (-0.63±0.07) and medium positive with a dry period (0.42±0.23) and lactation length (0.43±0.21). High negative genetic correlation between age at first calving and 305 days milk yield suggest that efforts should be made to reduce age at first calving to optimum level.

Figure 5. Ongole cows in a herd.
Acknowledgement

The authors would like to thank the Director, PDC, Meerut for providing necessary help in the preparation of this article and to the In-charge, Lam Farm, Guntur for supplying the information.

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Deoni cattle breed of India. A study on population dynamics and morphometric characteristics


National Bureau of Animal Genetic Resources, Post Box No. 129, G. T. Road Bypass, Karnal 132 001 Haryana, India

Summary

Deoni is an important dual-purpose breed of cattle in Maharashtra. These animals are mainly found in the Latur district and the adjoining area of Prabhani, Nanded and Osmanabad districts of the Marathwada region of Maharashtra. From 1996 to 1999, a systematic survey was conducted in 13 strata involving 69 villages to determine geographic distribution, establish breed characteristics, determine socioeconomic status and existing management practices as well as to estimate the approximate population of Deoni cattle in its breeding tract. The total number of households enumerated was 9 132. The average herd size was 2.5 animals with a range of 1 to 16. About 30 percent of farmers were found rearing Deoni cattle. The total population of the Deoni in the entire breeding tract was estimated at 118 945. A decrease in Deoni cattle population (8.78 percent) was also noticed from August 1996 to August 1998.

Deoni is a medium heavy animal. It is found in three-colour variations viz. Wannera, Balankya and Shevera. The body is moderately developed and symmetrical with distinct muscles. Horn length, ear length, head length, chest girth, body length and height averaged 17.61, 26.18, 49.82, 151.82, 120.11 and 122.22 cm in adult cows and 19.97, 26.67, 53.68, 163.55, 129.59 and 134.36 cm in bullocks. Lactation milk yield averaged 868 litres. The average fat content in the milk of Deoni cows was 4.3 percent. Cows showed their first estrus at the average age of 36 months. Average age at first calving was 46 months. Service period and inter-calving period averaged 170 and 447 days. The selected bulls started breeding at the age of 30 months. Calf and adult mortality was found to be negligible and the breed was found to be hardy and well adapted to tropical draught prone areas. The declining trend of the Deoni cattle breed calls for immediate steps to control the reasons. Regarding conservation and improvement, both models need to be implemented effectively to make the programme successful.

Resumen

La Deoni es una raza vacuna de doble propósito originaria de Maharashtra. Estos animales se encuentran principalmente en el distrito de Latur y las zonas vecinas de Praghani, Nanded y Osmanabad, en el distrito Marathwada de en la región de Maharashtra. Entre 1996 y 1999 se llevó a cabo una encuesta sistemática en 13 zonas que comprendían 69 poblados con el fin de determinar la distribución geográfica, establecer las características de la raza, determinar el estatus socioeconómico y las prácticas de conducta existentes, así como hacer una estimación de la población aproximada existente de la raza Deoni en su hábitat. El total de familias propietarias fue de 9 132, y la media de animales por familia de 2,5, con un espectro de 1 a 16. Alrededor del
Deoni cattle breed of India

Figure 1. A Deoni cow.

30% of the agricultores resultó ser criados de la raza Deoni. La población total de Deoni en la zona originaria fue establecida en 118,945, y se observó una diminución de la raza del 8,78% entre agosto 1996 y agosto 1998.

Se trata de una raza de peso medio que se subdivide según una variación de tres colores: Wannera, Balankya y Shevera. El cuerpo se presenta bastante desarrollado y simétrico con músculos visibles. La longitud de los cuernos, orejas, cabeza, circunferencia torácica, longitud del cuerpo y altura media son respectivamente de 17,61; 26,18; 49,82; 151,82; 120,11; y 122,22 cm en los animales adultos y de 19,97; 26,67; 53,68; 163,55; 129,59; y 134,36 cm en los novillos. El rendimiento medio por lactación es de 868 litros. El contenido medio en grasa en la leche de la raza Deoni es de 4,3%. Las hembras presentan el primer estro hacia la edad de 36 meses, y la media de edad al primer parto es de 46 meses. El periodo de monta y el intervalo entre partos es de 170 y 447 días. Los machos seleccionados se utilizan en reproducción a partir de los 30 meses. Se consideró que la mortalidad de crías y adultos no representaban un dato importante ya que la raza se presenta fuerte y bien adaptada a las zonas secas tropicales. El declive de la raza Deoni ha provocado una serie de medidas inmediatas para averiguar los motivos. En cuanto a la conservación y la mejora ambos modelos necesitan ser mejorados para conseguir un programa de éxito.

Keywords: Distribution, Characteristics, Population dynamics, Management practices.

Introduction

Deoni is an important dual-purpose cattle breed of Maharashtra. These animals are mainly found in the Latur district and the adjoining area of Parbhani, Nanded and Osmanabad districts of the Marathwada region of Maharashtra. The name of the breed is derived from Deoni Taluk of the Latur district. The breed is also known as Surti, Dongarpati and Dongri. It is found in three colour variations viz. Wannera (clear white with black colour at the sides of the face), Balankya (clear white with black spots on the lower side of the body) and Shevera (white...
body with irregular black spots). Deoni cattle are hardy and well adapted to their breeding tract constituting an important cattle genetic resource of Maharashtra.

Present status of a livestock breed in terms of population size and the breed characteristics is essential to formulate the conservation and improvement strategies for the breed. A systematic survey was, therefore, undertaken to determine geographic distribution, establish breed characteristics, determine socioeconomic status and existing management practices and to estimate the approximate population of Deoni cattle in its breeding tract during the period 1996 to 1999.

Materials and methods

The Deoni breeding tract with a total area of about 11,240 km² is located approximately between 17° 35' and 20° 05'N and between 75° 16' and 78° 15'E. The elevation of the breeding tract ranges from 409 to 455 m above mean sea level. The climate of the Deoni breeding tract is generally hot throughout the year except for some winter months. The average temperature varies from 9 to 44°C and the average relative humidity from 40 to 54 percent. The tract receives maximum rains during June to September. The mean annual rainfall varies from 750 to 990 mm.

A total of 10 strata from the Latur district and one stratum each from the Parbhani, Nanded and Osmanabad districts of Maharashtra State (India) were selected for the survey of Deoni cattle. From each stratum five to six villages were further randomly selected. Thus, the total survey was conducted in 13 strata involving 69 villages. Information on geographical distribution of breed, socioeconomic status of the farmers, category wise enumeration of the population (calves, young stock, milking females, dry females, working males and bulls), feeding and management practices followed and disease aspects were collected. Morphological, conformational as well as production and reproduction characteristics of Deoni cattle were recorded for phenotypic characterization of Deoni breed.

Figure 2. A Deoni bull.
Table 1. Body measurements ± SE of different category of Deoni cattle.

<table>
<thead>
<tr>
<th>S. N.</th>
<th>Category</th>
<th>Records</th>
<th>Horn length (cm)</th>
<th>Ear length (cm)</th>
<th>Head length (cm)</th>
<th>Chest girth (cm)</th>
<th>Body length (cm)</th>
<th>Height at wither (cm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Calves (0-3 months)</td>
<td>188</td>
<td>--</td>
<td>17.34±0.52</td>
<td>27.22±0.83</td>
<td>78.82±2.19</td>
<td>68.18±1.43</td>
<td>76.42±1.32</td>
</tr>
<tr>
<td>2.</td>
<td>Calves (4-6 months)</td>
<td>246</td>
<td>--</td>
<td>19.57±0.60</td>
<td>31.88±1.20</td>
<td>94.56±3.85</td>
<td>78.45±1.86</td>
<td>86.45±1.87</td>
</tr>
<tr>
<td>3.</td>
<td>Calves (7-9 months)</td>
<td>288</td>
<td>--</td>
<td>21.54±0.48</td>
<td>36.39±1.03</td>
<td>107.01±3.26</td>
<td>87.93±1.98</td>
<td>93.78±2.20</td>
</tr>
<tr>
<td>4.</td>
<td>Calves (10-12 months)</td>
<td>317</td>
<td>0.95±0.38</td>
<td>23.06±0.46</td>
<td>38.86±1.03</td>
<td>114.53±3.31</td>
<td>93.30±2.34</td>
<td>98.51±3.46</td>
</tr>
<tr>
<td>5.</td>
<td>Calves (13-18 months)</td>
<td>373</td>
<td>2.39±0.35</td>
<td>24.58±0.34</td>
<td>41.94±1.09</td>
<td>124.97±2.73</td>
<td>101.56±1.50</td>
<td>107.94±2.32</td>
</tr>
<tr>
<td>6.</td>
<td>Calves (19-24 months)</td>
<td>354</td>
<td>3.76±0.46</td>
<td>25.39±0.43</td>
<td>44.73±1.06</td>
<td>129.73±5.31</td>
<td>103.52±2.59</td>
<td>112.50±2.23</td>
</tr>
<tr>
<td>7.</td>
<td>Calves (&gt; 24 months)</td>
<td>368</td>
<td>6.16±0.74</td>
<td>27.52±0.35</td>
<td>48.01±0.93</td>
<td>144.83±2.81</td>
<td>116.43±2.06</td>
<td>122.06±2.39</td>
</tr>
<tr>
<td>8.</td>
<td>Bulls</td>
<td>52</td>
<td>7.19±1.29</td>
<td>25.48±1.30</td>
<td>54.87±7.10</td>
<td>173.61±6.08</td>
<td>135.13±7.60</td>
<td>139.55±6.25</td>
</tr>
<tr>
<td>9.</td>
<td>Bullocks</td>
<td>731</td>
<td>19.97±0.92</td>
<td>26.67±0.34</td>
<td>53.68±0.83</td>
<td>163.55±1.55</td>
<td>129.59±2.28</td>
<td>134.36±2.03</td>
</tr>
<tr>
<td>10.</td>
<td>Cows</td>
<td>1007</td>
<td>17.61±0.74</td>
<td>26.18±0.52</td>
<td>49.82±0.91</td>
<td>151.82±1.92</td>
<td>120.11±2.16</td>
<td>122.22±1.23</td>
</tr>
</tbody>
</table>
Seventy animals from each village and 350 from each stratum were taken for the study. Physical measurements of the calves were recorded every month up to one year. Young stock was physically measured once in six months. Measurements on adult animals were taken only once in the three years of study. The feeding and management of all marked animals was recorded once in three months. Milk recording were done once a month from the month of lactation by milking twice. Reproduction and disease aspects of these animals were also noted by observations and on the basis of information provided by the farmers. The total population of the Deoni breed was estimated by superimposing the population obtained by a survey on the Livestock Census Data already available with the State Department of Animal Husbandry. The breed descriptor was developed. The study was completed with the help of enumerators and supervisors.

Results and Discussion

General observations

The total number of households enumerated was 9,132. The average family size was about seven. The literacy percentage varied from 40 to 75 in the breeding tract. The average land holding was 8.5 acres out of which about 12 percent was irrigated and the remainder rainfed. The average herd size was 2.5 animals with a range of 1 to 16. About 30 percent of farmers were found rearing Deoni cattle.

Population statistics

Out of the 69 villages surveyed, 49 were in high-density areas whereas 20 others were in low-density areas, which were nearer to the borders of the breeding tract. The population of Deoni breed was 1.35 (Mulaj) to 58.58 percent (Deverjan) of total cattle.
population in different strata. A total of 6 244 animals of this breed consisting of 541 calves (0-6 months), 783 calves (6-24 months), 328 calves (above 24 months), 1 212 females in milk, 719 females dry, 2 563 working males and 98 breeding males were found in the strata under survey. The total superimposed population of the Deoni in the entire breeding tract was estimated as 1 18 945 involving 5 014 from Parbhani, 97 002 from Latur, 14 882 from Nanded and 1 947 from the Osmanabad districts. The total superimposed population constituted approximately 39 977 (33.6 percent) breeding females, 1 784 (1.5 percent) breeding bulls and 48 827 (41.1 percent) working bullocks.

The Deoni cattle population enumerated from the villages at the initial stage (August 1996) was also compared to that enumerated after two years (August 1998). It was observed that the Deoni cattle population decreased by 8.78 percent during the period under study. This revealed that the Deoni cattle population is decreasing continuously in the breeding tract and warrants urgent steps against its further decline.

Physical characteristics

Deoni is a medium heavy animal. It is found in three colour variations viz. Wannera, Balankya and Shevera. The body is moderately developed and symmetrical with distinct muscles. Males are more developed than females. Body colour is clear white in Wannera and Balankya strain. Irregular black spots are found on the body in Shevera. The head is partially white in Wannera. Head is masculine, alert, broad and slightly convex. The colour of the head is black and white in Wannera and Shevera and completely white in the Balankya strain. The forehead is prominent, broad, slightly bulged and white in all the strains; ears are long and drooping with slightly curved tips; horns are medium, thick, apart and emerge from the sides of the

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Characteristics</th>
<th>Records</th>
<th>Average± SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Milk yield in 1st month (litres)</td>
<td>310</td>
<td>106.77±6.23</td>
</tr>
<tr>
<td>2.</td>
<td>Milk yield in 2nd month (litres)</td>
<td>383</td>
<td>107.63±6.17</td>
</tr>
<tr>
<td>3.</td>
<td>Milk yield in 3rd month (litres)</td>
<td>466</td>
<td>106.25±2.79</td>
</tr>
<tr>
<td>4.</td>
<td>Milk yield in 4th month (litres)</td>
<td>516</td>
<td>101.83±5.76</td>
</tr>
<tr>
<td>5.</td>
<td>Milk yield in 5th month (litres)</td>
<td>531</td>
<td>97.95±6.35</td>
</tr>
<tr>
<td>6.</td>
<td>Milk yield in 6th month (litres)</td>
<td>573</td>
<td>88.20±6.75</td>
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<tr>
<td>7.</td>
<td>Milk yield in 7th month (litres)</td>
<td>556</td>
<td>76.70±5.93</td>
</tr>
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<td>8.</td>
<td>Milk yield in 8th month (litres)</td>
<td>523</td>
<td>59.27±6.51</td>
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<td>9.</td>
<td>Milk yield in 9th month (litres)</td>
<td>426</td>
<td>46.65±5.39</td>
</tr>
<tr>
<td>10.</td>
<td>Milk yield in 10th month (litres)</td>
<td>329</td>
<td>33.23±5.45</td>
</tr>
<tr>
<td>11.</td>
<td>Milk yield in 11th month (litres)</td>
<td>71</td>
<td>15.61±5.77</td>
</tr>
<tr>
<td>12.</td>
<td>Lactation Yield (litres)</td>
<td>597</td>
<td>868.24±49.56</td>
</tr>
<tr>
<td>13.</td>
<td>Average fat %</td>
<td>200</td>
<td>4.3±0.14</td>
</tr>
<tr>
<td>14.</td>
<td>Age at estrus (months)</td>
<td>1007</td>
<td>35.6±0.53</td>
</tr>
<tr>
<td>15.</td>
<td>Age at 1st conception (months)</td>
<td>1007</td>
<td>36.6±0.54</td>
</tr>
<tr>
<td>16.</td>
<td>Age at 1st calving (months)</td>
<td>1007</td>
<td>45.7±0.52</td>
</tr>
<tr>
<td>17.</td>
<td>Service period (days)</td>
<td>1007</td>
<td>170.0±7.0</td>
</tr>
<tr>
<td>18.</td>
<td>Inter-calving period (days)</td>
<td>1007</td>
<td>447.0±8.0</td>
</tr>
<tr>
<td>19.</td>
<td>Gestation length (days)</td>
<td>1007</td>
<td>277.0±1.0</td>
</tr>
</tbody>
</table>
poles; tips of the horns are blunt; and eyes are prominent, bright and alert with black eyebrows.

The hump is massive and well developed in males and small in females. The neck is short, strong and well developed. Dewlap is thick, pendulous, and muscular with folds. It is more pendulous in males than in females. The chest is deep and wide. The skin of these animals is thick and loosely attached to the body. The tail is long reaching below the hock with black and white switch. The udder is well attached and medium in size with squarely placed black teats. Bulls are characterized by blackish scrotums of a good size. The animals are docile and calm.

**Physical measurements**

The linear measurements viz. height at withers, body length, chest girth, horn length, ear length and head length of all categories of Deoni cattle were recorded on 3,924 animals (Table 1). It was revealed that measurements increased with increase in age. The ear length in adult animals was similar in both sexes. The chest girth, body length and height at withers were more in bulls than bullocks and milk/dry cows. Horn length, ear length, head length, chest girth, body length and height averaged 17.61, 26.18, 49.82, 151.82, 120.11 and 122.22 cm in cows and 19.97, 26.67, 53.68, 163.55, 129.59 and 134.36 cm in bullocks.

Average chest girth, body length and height at wither in the present study were lower than that reported by Deshpande and Singh (1978). They reported 168.3 cm chest girth, 132.2 cm body length and 126.2 cm height at wither in adult cows in an organized herd.

**Production and reproduction characteristics**

The milk recording was carried out at monthly intervals in all the villages included in the project. The recording on 597 cows of different lactations was made. The milk consumed by the calf at the initial and last stage of milking was not included in the milk yield. The production and reproduction characters are shown in Table 2. Lactation milk yield averaged 868 litres. Milk yield was almost similar in first three months of lactation (106 to 107 litres) and declined.
thereafter from the fourth month (102 litres) to the tenth month (33 litres). The average fat content in the milk of Deoni cows was 4.3 percent with a range of 2.5 to 5.3 percent. Cows showed their first oestrus at the average age of 36 months. Average age at first calving was 46 months. The service period and inter-calving period averaged 170 and 447 days. The average number of calvings per cow was six to seven. The selected bulls start breeding at the age of 30 months.

The production and reproduction performance of Deoni cattle in the present investigation was similar to that reported in the literature. Deshpande and Singh (1977A) observed lactation milk yield in Deoni herds ranging from 800 to 1 000 kg. Kakde et al. (1976) reported age at first calving in Deoni cows as 47 months. A service period of 184 days and calving interval of 466 days was reported in Deoni cows by Deshpande and Singh (1977B). Sontakke et al. (1978) reported average fat percent of 4.29 in 100 samples of Deoni cow milk.

**Draught capacity**

The observations were recorded on 25 pairs of bullocks at different locations. A bullock pair was able to pull the load of 10-11 quintals using wooden heavy cart with wooden wheels on katcha (muddy) road. They are able to pull a maximum of 28-30 quintals of load using a light steel bullock cart with tyre wheels on the tar roads for about 10-15 km. One pair of bullocks can pull the medium plough for about seven to eight hours a day and can plough about half an acre of land. The bullocks show their maximum potential at five to six years of age and maintain it up to 10-12 years of age.

**Management practices**

Deoni cattle are maintained under a semi-intensive system of management. They are traditionally reared on grazing in fallow lands, dry lands or bunds of the farms. The animals are allowed to graze from 8.00 a.m. to 5.00 p.m. The breeding bulls are usually stall fed. Only 12.7 percent of farmers grow green fodder (maize and sorghum). The animals are also provided with maize/sorghum stovers, paddy straw, wheat straw and sugarcane tops as well as groundnut, *urd* (*Vigna mungo*) and *arhar* (*Cajanus cajan*) haulms. The cows suckle their dams before and after milking. Quantity of the dry fodder mainly depends on availability of green fodder in the grazing areas. Some amount of concentrate is also given to the milking cows and working bullocks.

The animals are housed in either separate houses or part of the owner’s residence during the night. About 50 percent of owners house their animals in open area, 3 percent keep their animals in *pucca* (cemented) houses and the remaining house their animals in *katcha* (muddy) house thatched with dry grass or sugarcane dry leaves. No weaning is practised in the breeding tract. The males are separated after 20 months of age and trained for agriculture operations. They are usually castrated at 30 months of age and used for transportation at three years of age.

**Disease prevalence**

The occurrence of foot-and-mouth disease was reported even after regular vaccination. Incidence of the other diseases like Rinderpest, Black Quarter, Coccidiosis, Mastitis and Pneumonia were also recorded. The calf and adult mortality was found to be negligible and the breed was found to be hardy and well adapted to tropical draught prone areas. Some cases of mastitis have also been reported by Deshmukh et al. (1995). Norladkar et al. (1994) reported occurrence of reproductive disorders in Deoni cows ranging from 2 to 4 percent.

**Acknowledgement**

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