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Domestic Animal Diversity Information System (DAD-IS): Its contribution for Animal Genetic Resource (AnGR) Management

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Abstract

Animal Genetic Resources (AnGR) defined as all those animal species, breeds and strains that are of economic, scientific and cultural interest to humankind in terms of food and agricultural production for the present or the future. AnGR provide crucial option for the sustainable development of livestock production. Efficient utilization of the resource in developing countries, such as Ethiopia, is a prerequisite for the opportunities to meet the future demands of food to improve the livelihood of poor people. Using appropriate information system is one of a global strategy for the management of AnGR, since it serves for decision-making, research and public awareness. In this regard, Domestic Animal Diversity Information System (DAD-IS: 3) is one of the global database hosted by FAO since 1996. It provides the user with searchable databases of breed related information on 14,000 breed population, representing 35 species and 181 countries member. It also provides countries with a secure means to control the entry, updating and accessing of their national data. In spite of its immense contribution in providing different information for proper management and utilization of AnGR, there are some areas which need attention. For example there is lack of full information for all breed and in all country especially in Ethiopian context. There is no well-organized information on available breeds. Both indigenous and introduced breeds considered as breeds of a specific country. Information on fish and honey bee which are currently prioritized area to eradicate poverty in Ethiopia is still lacking substantially. Besides there are limited data related for cryo conservation, the environmental and cultural values of AnGR that is very important to addressee the issue of AnGR conservation throughout the world. We believe that DAD-IS database become more dynamic if these areas get urgent attention.

Keywords: *DAD-IS, AnGR management and contribution*

Introduction

Animal Genetic Resources (AnGR) defined as all those animal species, breeds and strains that are of economic, scientific and cultural interest to humankind in terms of food and agricultural production for the present or the future (Rege and Okeyo,2006;FAO,2007). AnGR provide crucial option for the sustainable development of livestock production. However, these valuable resources have been threatened by so many factors. Rege and Gibson (2003) identify the use of exotic germplasm, changes in production systems, changes in producer preference because of socio-economic factors, and a range of disasters (drought, famine, disease epidemics, civil strife/war) as the major threaten factors to cause genetic erosion. Therefore, sustainable management of farm animal genetic resources is of vital importance to food, nutrition and environment security. Their conservation and judicious use is critical for the

survival as well as improved livelihood of resource poor farmers (TAAS, 2009). Efficient utilization of Animal Genetic Resources (AnGR) in developing countries, such as Ethiopia, is a prerequisite for the opportunities to meet the future demands of food to improve the livelihood of poor people (ILRI, 2006).

Using appropriate information system is one of a global strategy for the management of AnGR. Information systems can serve a variety of different purposes, but collectively they contain important information for decision-making, research, training, planning and evaluation the program, progress reporting and public awareness (FAO, 2007).An information system normally includes hardware, software (applications), organized data (information) and facilities for communication. It can be operated either manually, electronically using computers, or through a combination of both. A well-organized information systems/database supports decision-making regarding the present value and potential future uses of AnGR by a range of stakeholders, including policy-makers, development practitioners, farmers and researchers. In this regard, Domestic Animal Diversity Information System (DAD-IS: 3) is one of the global information system or database (http:/dad.fao.org/) hosted by FAO since 1996. It provides the user with searchable databases of breed-related information on 14,000 breed population, representing 35 species and 181 countries member. It also provides countries with a secure means to control the entry, updating and accessing of their national data.

The database was developed in order to involve, coordinate and assist governments, international agencies, NGOs, training and research groups throughout the world; and help to achieve better management of all AnGR used for the production of food and agriculture in all countries, in accordance with the World Food Summit Plan of Action and the UN Convention on Biological Diversity. In doing so the database/DAD-IS has immense contribution in providing different information for proper management and utilization of AnGR, there is a need to reconsider some areas for better utilization throughout the world for the present as well as the future. Therefore, in this current research communication, we try to explore the database on its contribution and those areas which need attention with regards to management of AnGR of the world.

Historical Evolution of the DAD-IS Database

The European Association for Animal Production (EAAP) was one of the first organizations to develop a database to monitor European livestock breeds. The information was later also made available through the Internet. This system was called the EAAP-AGDB (Animal Genetic Data Bank). The system comprised textual breed descriptions as well as numeric information, particularly for population sizes and structures by year (DAD-IS, 2011).

Animal Genetic Resources Group of the Food and Agricultural Organization of the United Nations (FAO) developed a similar database for non-European countries. This database became the back-bone of the Internet-based dynamic Domestic Animal Diversity Information System (DAD-IS) which was launched in 1996.

The two databases were incompatible and unable to exchange data, which meant that European National Coordinators for the Management of Animal Genetic Resources had to enter national data into both systems. Furthermore, both systems had aged and became progressively more difficult to maintain and to develop further. The European Farm Animal Biodiversity Information System (EFABIS) project funded by the European Commission under the Fifth European Community Framework Program for research, technological development and demonstration activities, created a network of information systems under the Open Source Model, based on a merging and redevelopment of the two existing systems. This has provided greater functionality and opened the road for further development. These newly developed systems replaced the previous systems at EAAP and FAO and further enabled an extended installation at the National Research Institute of Animal Production in Poland (DAD-IS, 2011). Thus, finally the project has been able to set up the DAD-IS: 3 databases which is the latest version updated in 2006.

Content of the Database [http://www.dad.fao.org/]

The Menu Bar of the data base page consists of 1) News which provides list of most recent announcements and updates in the database ; 2)About DAD- IS which provides general information about the data base such as how and when it was developed ; 3) Network which provide list of coordinators of different regions i.e. only Europe , American and the Caribbean appointed their coordinator 4) Breeds which provides browsing options indicated below; 5) Library provides references to publications, link to web pages of research institutions, free software tools, NGOs etc. and search information for a breed and/or by key words i.e. searching through the title, author, description (DAD-IS,2011) .

Breed browsing option provides further options such as 1) Breed by species and country which provided number of breeds by species and country, 2) Status of reporting by country (degree of completeness) which provided percentage of data field completed by the country for example Africa (40%), Asia and Pacific (42%),Europe(47%), Latin America and the Caribbean (33%), the filled and all possible fields of records entered from one country, 3) Trans-boundary breeds which indicated the number of countries reporting the particular breed, population size and risk status of the breed with respective country, 4) Cross table generator which provided information on species and risk status with respective of individual country, 5) Breed data sheet which provide information on available breed in the country with respective of species but both indigenous and exotic breed listed together without clarification, 6) Image browser provide image of the breed with respective of the country but not complete for all breeds and country, 7) Early warning tool provide breed status (global as well as national risk), their number and annual growth rate of particular breed, 8) Population structure and inbreeding (F) provide information on population size (minimum and maximum), number of breeding male and female, number of herds, number of effective population size (Ne), estimate of inbreeding coefficient and risk status at national level (DAD-IS,2011).

The different options mentioned above provide access for users the overall situation of AnGR for particular species/breed including risk status with respective of the country. This

information might be helpful for decision making for further conservation and/or proper management of the recourse.

Areas Which Need Attention

Even though the database provides valuable information for proper management of AnGR, there are some limitations which hinder the completeness of the information system since it is the global database. For example there is lack of full information for all breed and in all country especially in Ethiopian context, there is no well-organized information on available breeds and their performances and both indigenous and introduced breeds considered as breeds of a specific country. There is no coordinator in all regions, i.e. only Europe, Latin America and the Caribbean appointed their coordinator. Data related for cryo-conservation, the environmental and cultural values of AnGR is lacking, but this information is very important to undertake effective management.

Besides there is no information on all species that used in food and agriculture such as fish and honey bees. Fish and honey production is the priority area in Ethiopian strategies to eradicate poverty in the country (IBC, 2007). Missing these data will have its own negative implication in effective utilization and conservation of the resources. There is no ease of access for browsing of different publication in the library because there are the same documents with different languages. So that if the mentioned areas get attention, the contribution of the database will be more acceptable throughout the world.

Conclusion

Using appropriate information system is one of a global strategy for the management of AnGR. DAD-IS is one of the global database to assist proper utilization and conservation of AnGR, However, there are is some areas which need attention such as incompleteness of the data on some species (honey bees and Fisheries) which is the top priority area to eradicate poverty in Ethiopia; absences of information on cryo-conservation, the environmental and cultural value of AnGR which is also very important data to undertake effective management. So that the mentioned areas requires for an urgent attention for better utilization of the database throughout the world. We believe that DAD-IS/ database become more dynamic if these areas get attention.

References

DAD-IS, 2011 (Domestic Animal Genetic Diversity Information System). The database, [http://dad.fao.org/].

FAO, 2007 (Food and Agriculture Organization of the United Nations).The state of the world's Animal Genetic Resources for food and Agriculture. Rome, Italy.

ILRI, 2006 (International Livestock Research Institute). Animal Genetics Training Resources version II. http://agtr.ilri.cgiar.org/Overview.htm.

IBC, 2007(Institute of Biodiversity Conservation) Ethiopian third country report. Addis Ababa, Ethiopia.

Rege, J.E.O. and Gibson, J.P., 2003. Animal genetic resources and economic development: Issues in relation to economic valuation. Ecological Economics, 45(3): 319–330.

Rege J.E.O and Okeyo A.M., 2006. Improving our knowledge of tropical indigenous animal genetic resource. http://agtr.ilri.cgiar.org/Overview.htm.

TAAS, 2009 (Trust for Advancement of Agricultural Science). Ranchi Declaration, Brain storming workshop on "strategy for conservation of farm Animal Genetic Resource" 10th -12th April, 2009, India.