STATE OF THAI ANIMAL GENETIC RESOURCES[1]

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ABSTRACT

Livestock production in Thailand has been important in the agricultural sector. The nature is the fountain of the biological diversity which provides foods and services to humankind. Animal genetic resources (AnGR) in Thailand are no exception to the others in which AnGR have been appreciated less than their values. As the world agreed to The Convention on Biological Diversity in 1992, Thailand has established ***the National Action plan for sustainable conservation of biological diversity, 1998-2002.*** The purposes were to strengthen the capacity for sustainable use of environment and natural resources as well as conservation measures of biological resources. The collective works on AnGR has been summarized; breed survey and characterization, information systems, policy planning, researches and capacity building. For sustainable use of AnGR, the well-planed breeding program is urgently needed.

Keyword: animal genetic resources, Thailand, national plan

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สถานภาพทรัพยากรพันธุกรรมสัตว์ของประเทศไทย[2]

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บทคัดย่อ

การผลิตปศุสัตว์ เป็นหนึ่งในเกษตรกรรมที่สำคัญของประเทศไทย แม้ว่าความหลากหลายทางชีวภาพที่มีอยู่จะเป็นฐานทรัพยากรสำคัญที่ใช้ในการผลิตสินค้าและบริการให้บริการแก่มนุษยชาติ แต่ทรัพยากรพันธุกรรมสัตว์ได้รับความสนใจน้อยมาก ตามที่อนุสัญญาว่าด้วยความหลากหลายทางชีวภาพมีผลบังคับใช้ตั้งแต่ปี พ.ศ.2535 ประเทศไทยได้จัดทำนโยบาย แผนและมาตรการการใช้ประโยชน์ความหลากหลายทางชีวภาพอย่างยั่งยืน พ.ศ. 2541-2545 โดยมีวัตถุประสงค์เพื่อเสริมสร้างความเข้มแข็งของประเทศในการใช้ประโยชน์ทรัพยากรธรรมชาติและสิ่งแวดล้อมอย่างยั่งยืนและเป็นกลไกในการอนุรักษ์ทรัพยากรชีวภาพอีกด้วย การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อรวบรวมและวิเคราะห์ข้อมูลจากเอกสาร การสำรวจ การจำแนก ระบบข้อมูลข่าวสาร ยุทธศาสตร์และแผนการวิจัยและการพัฒนาศักยภาพของกรมปศุสัตว์ตามนโยบายของชาติ พบว่าจำเป็นต้องมีแผนการปรับปรุงพันธุ์สัตว์ที่ชัดเจนจึงจะที่วัตถุประสงค์เพื่อให้การใช้ทรัพยากรพันธุกรรมสัตว์ของไทยเป็นไปอย่างยั่งยืน

คำสำคัญ : ทรัพยากรพันธุกรรมสัตว์ ประเทศไทย ยุทธศาสตร์ระดับชาติ

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INTRODUCTION

The United Nations Conferences on Environment and Development in 1992, Thailand as well as other the international countries has agreed upon the Agenda 21 to conserve the biological diversity and the global environment. The National Environment Board of Thailand has established ***the Action plan for sustainable conservation of biological diversity, 1998-2002***. The strategies has been outlined to strengthen the capacity for sustainable use of environment and natural resources as well as a standard criteria for conservation of biological resources that are applicable to the country.

NATIONAL STRATEGY FOR SUSTAINABLE CONSERVATION OF AnGR

Department of Livestock Development (DLD) under Ministry of Agriculture and Cooperatives (MOAC) is responsible for the livestock production and health. The activities regarding the conservation of animal genetic resources (AnGR) have been in the national plans for biological diversity. The strategies are as follow; (1) to enhance capacity building, (2) to increase the ability to conserve effectively, (3) to create the public awareness in conservation of AnGR, (4) to conserve the diversity in breed, population and genetic resources, (5) to minimize the harmful activities to the biodiversity, (6) to encourage the conservation and use of the national resources including both the environment and the culture and (7) to encourage the cooperation between the agent both nationally and internationally. All activities focus on the indigenous AnGR.

SURVEY AND BREED CHARACTERISATION OF INDIGENOUS AnGR

Farm animal has been an important part of the country lifestyle for a long time. Livestock has provided the good quality protein for the people. Production system has changed from the backyard animal to industry and also species of important (Figure 1). Most of the animals used for food production were imported breeds. Nevertheless, the number of indigenous animals is still not at risk and has large genetic diversity (figure 1). Breed characterisation was based on local names and phenotypic descriptions. There was some efforts for molecular characterisation in some species (Khumnirdpetch et al, 2000). Therefore, a well-characterised population and appropriate breeding program must be determined for either finding of the uniqueness of the resources or sustainable conservation of AnGR.

POLICY PLANNING

DLD has encouraged the participation of the community and farmer in developmental process and implementation in order to achieve the concept of farmer right and benefit sharing arise from the use of AnGR. The collaboration on policy research is needed to determine the needs for the government policy planning. Many laws and regulations must be revised accordingly to the changes in livestock sectors to provide a good environment for the investment and

Table 1 Characterization of indigenous genetic resources for livestock production

Species	Number of breeds/srains	Phenotypic Description	Genetic Evaluation	DNA fingerprinting	Karyotyping
Chicken	44	Yes	No	Some	No
Duck	3	Yes	No	Some	No
Cattle	3	Yes	Some	Some	Yes
Buffalo	1	Yes	Yes	Some	Yes
Goat	2	Yes	No	No	No
Sheep	1	Yes	No	No	No
Pig	6	Yes	No	Some	No
Grass	506	Yes	No	Few	No
Legumes	250	Yes	No	No	No
Microbes	767	Yes	-	Some	Some

participation as well as the advances of new technology. Government through the consultation with stakeholders should have the legal framework to facilitate food security.

RESEARCH Livestock production is the agricultural process which utilize the component of biological diversity, plants animals and microorganisms. The knowledge of the indigenous species is limited and scattered among agencies. The collaboration among the agency within the country is needed. The research purposes are the sustainable livestock development to produce the quality food as well as concerning the safety of human and environments (Khumnirdpetch et. al, 2001). Livestock is a system which combine all the component of biological diversity, economic, social and culture. Study of indigenous animal at the molecular level or population (Khumnirdpetch et.al, 2000)is as important as that of other disciplines Therefore, the research should emphasized the management of animal genetic resources as a part of the component of agricultural biodiversity.

CONSERVATIVE MEASURES

Breed improvement programs have been initiated in some livestock species; dairy, beef, buffalo, and swine; for a limited herds. The national breeding program is not available due to the lack of recording system. *Ex-situ* conservation has been done by cryopreservation of the semen, eggs and embryo where appropriate, collection of cells, tissues and seeds for forage and microorganisms. *In-situ* conservation has been considered as the sustainable process and can have a large impact for the community participation. However, livestock production in Thailand is more commercialized. The question that how we can find the efficient incentive measures for smallholders, producers and community to participate in conservation.

CAPACITY BUILDING

Human resources within the country are limited especially in the field of sustainable livestock production. The conservation and use of AnGR has received low priority for researchers. Breeding program has not been practiced in all major livestock species. Urgent needs for the trainers in these disciplines are required for better communication between field personnel and decision-makers. Therefore, the future plans and activities for sustainable use of AnGR should
be accounted for capacity building. The academic and research institution are encouraged to offer new courses/disciplines regarding the AnGR. Multidisplinary personnel is the vital for success in sustainable livestock production that can produce good quality food and safe for human health and environment.

COORDINATION: The main activity will be the coordination of the national resources and provide the forum for exchange ideas and plans among related agencies; government, NGOs, producers and farmers. Optimistic view is needed.

There are only small number of animal species which contributed to 30-40% for food and agricultural production. Livestock production involves various stakeholders; government, NGOs, producers and farmers. Conservation and use of genetic resources in Thailand needs action. As the coordinator, Department of livestock development can pool the resources within the country, regional and international level through the efficient management and organization. Indigenous animal at the molecular level as well as the socio-economic and see thing as a system which combine all the component of biological diversity.

Regular communication with other agencies is vital for the plan of action. The development of technologies, the lesson learned from different production environment can be utilize as a basis for further development in the project with less cost.

CONCLUSION

Conservation of AnGR is the process where all the stakeholders should participate for future benefits to mankind. The coordination with other agencies, nationally and internationally will provide information and opportunity for development of livestock sector. Well planed breeding program and measures for effective communication especially the decision-makers are urgently needed. Sustainable conservation of AnGR as a vital component in the agricultural biodiversity system will be a great challenge.

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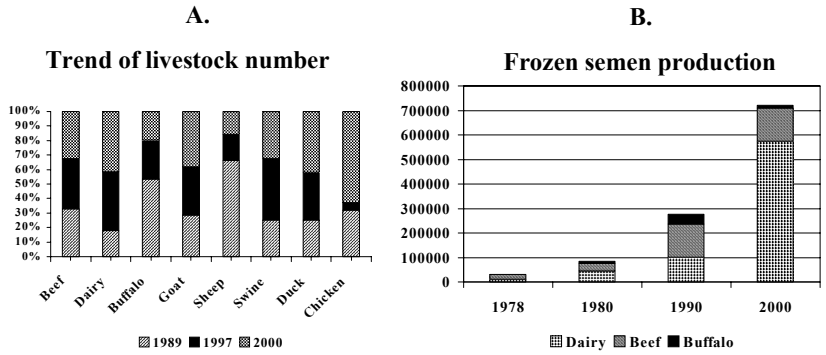

Figure 1 Livestock population (A.) and cryopreservationof AnGR (B) of Thailand. (Sources : Department of Livestock Development, 2000)