

Efforts In Conserving Purebred Bali Cattle As Draught And Beef Type In Bali Island, Indonesia.

*(UPAYA PELESTARIAN SAPI BALI SEBAGAI TABUNGAN DAN TIPE PEDAGING DI
PULAU BALI INDONESIA)*

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ABSTRACT

Bali cattle (*Bos javanicus* d'Alton) is a part of the complex evolution of all cattle over a long time in Indonesia. Little is known of the origin of bali cattle in Southeast Asia. The geographical distribution of *Bos (Bibos)* types of cattle suggests that the centre of domestication was Indo-China and Malaysia, then spreading to Bali. Due to such several unique characters of bali cattle, some efforts have been conducting with main purpose to conserve purebred, draught as well as meat type cattle on Bali in particular and Indonesia in general. Method has been employed in this study are literature explore, visiting, interview with questionnaire sheet. Set of efforts have been conducting in order to conserve purebred bali cattle by the government. For examples, establishment of bali cattle Breeding centre of Pulukan village, establishment of bali cattle Breeding centre of Sobangan village, establishment of bali cattle Conservation centre of Nusa Penida Island, essence of Udayana University, Bali and role of Department of Animal Husbandry. It could be concluded that government as a whole have played an important role in conserving the purebred bali cattle as draught and meat type cattle at certain suitable places in Bali to fulfill local and national daily meat requirement by establishing good collaboration with related government agency as well as farmers.

Keywords: bali cattle, local government, Bali island, conservation

ABSTRAK

Sapi bali (*Bos javanicus* d'Alton) merupakan bagian dari evolusi semua ternak di Indonesia. Sedikit yang diketahui tentang asal-usul sapi bali di Asia Tenggara. Distribusi geografis *Bos (Bibos)* menunjukkan bahwa pusat domestikasi adalah Indo-China dan Malaysia, kemudian menyebar ke Bali. Karena karakteristik unik dari sapi Bali, beberapa upaya telah dilakukan dengan tujuan utama untuk melestarikan ras, serta jenis daging sapi di Bali khususnya dan Indonesia pada umumnya. Metode yang digunakan dalam penelitian ini adalah mengeksplorasi literatur, mengunjungi, wawancara dan mengisi lembar kuesioner. Beberapa upaya telah dilakukan oleh pemerintah untuk melestarikan ras sapi bali. Salah satu contohnya dengan pembentukan Pusat Pembibitan sapi bali di desa Pulukan, Sawangan, pembentukan pusat Konservasi sapi Bali di Nusa Penida, peran dari Universitas Udayana, dan Dinas Peternakan Bali. Dapat disimpulkan bahwa pemerintah secara keseluruhan berperan penting dalam melestarikan ras sapi bali sebagai tabungan dan tipe pedaging sapi bali, untuk memenuhi kebutuhan daging harian lokal dan nasional dengan mendirikan kerjasama yang baik dengan instansi pemerintah terkait serta petani.

Kata kunci: sapi bali, pemerintah lokal, pulau Bali, pelestarian

INTRODUCTION

According to Payne (1970) bali cattle (*Bos javanicus* d'Alton) in Indonesia, is a part of the complex evolution of all cattle over a long time. In the past was known as type of wild cattle, *Bos acutifrons* comes from a part of a fossil found in India. The wild cattle then developed into to streams: the aurochs (*Bos primigenius*) that inhabited the forests of Asia, North Africa and Europe; and the urus (*Bos namadicus*) found in India and other parts of Asia. Most views expressed on the origin of the cattle focus on the auroch as the foundation of most of the cattle species and breeds developed in the world. The auroch, although an ancient cattle type, has survived into historical memory as the last recorded animal was killed in a Polish forest in the seventeenth century. They were large animals with enormous horns, the latter a characteristic found in modern cattle species.

Moreover, Payne pointed out that little is known of the origin of *Bos (Bibos)* type cattle in Southeast Asia. The geographical distribution of *Bos (Bibos)* types of cattle suggests that the centre of domestication was Indo-China and Malaysia, then spreading to Bali. The other centre of domestication was probably Assam-Burma and led to the development of the gayal. Indonesia probably became the centre of bali cattle domestication some ten to five thousand years ago. The process of domestication probably started in prehistoric times on Bali and Java. There are two types of bali cattle in Indonesia, a domestic type, called bali cattle and a wild type named banteng. There are not many wild bantengs left in Indonesia, mainly found in the national parks such as Ujung Kulon and Baluran on eastern part of Java.

In addition, Jellinek *et al.* (1980) reported, as a unique animal, the bali cattle are different from all other species of cattle as results of their origin and

evolution. Crossbreeding with European cattle (*Bos Taurus*), the male offspring is usually infertile. Bali cattle do have some distinct characteristics which have made them the cattle breed of choice in many parts of Indonesia. Some of the unique differences of bali cattle from other cattle which make them valuable assets in Indonesia for examples: Size-smaller than Zebu and European cattle. Color: strikingly uniform markings. Behaviour: timid and can become wild readily. Reproduction: high conception rate. Lactation: ability to stop lactating and survive a bad dry season. Feed utilization: better able to utilize low quality feed base. Heat tolerance: better heat tolerance than buffalo and other cattle. Water turnover: lower water turnover than *Bos taurus*. Meat quality: marked fat deposition sites and limited fat in muscle mass. Disease pattern: stated to be resistant to external and internal parasites except liver fluke, *Fasciola gigantica*. Increased resistance to malignant catarrhal fever and Jembrana disease.

Therefore, due to such several unique characters of Bali cattle, some efforts have been conducting with main purpose to conserve purebred, draught as well as meat type cattle on Bali in particular and Indonesia in general.

RESEARCH METHODS

Method has been employed in this study are literature explore, visiting, interview with questionnaire sheet.

RESULTS AND DISCUSSION

Number of set of efforts have been conducting in order to conserve purebred bali cattle both quality and quantity on Bali island in particular and Indonesia in general. In addition, collaboration has also been established among local and central governments of Bali and Indonesia respectively. Such efforts

comprises of Establishment of bali cattle Breeding centre of Pulukan, Establishment of bali cattle Breeding centre of Sobangan, Establishment of bali cattle Conservation centre of Nusa Penida Island, Essence of Udayana University, Bukit Jimbaran, Bali and Role of Department of Animal Husbandry.

Number of efforts have been implementing since long time ago initiated by the government of Indonesia via Directorate General of Animal Husbandry and other related government office of Bali local area. Both central and local government aims could be based on maintaining and sustaining quality as well as quantity of purebred bali cattle particularly on Bali island since Bali is declared as the only island for bali cattle. The reason is in general agreement with Haryanto *et al.* (2002) who stated that efforts in increasing productivity could be achieved by quantitative approach of increasing number of population and qualitative approach of increasing productivity per unit of cattle genetically. Additionally, such approaches have been realized by paddy rice-cattle integration system (Berman, 2011; Renaudeau *et al.*, 2011).

Establishment Of Bali Cattle Breeding Centre Of Pulukan And Sobangan

Pulukan is a village located at western part of Bali island, Jembrana regency. Pulukan breeding centre has hundreds of hectare wide area particularly for the bali cattle breeding activity. It was started in 1976 with Central Breeding and Development of Bali cattle's name. Afterwards, in 1986 it was changed the name with the Pulukan Breeding Centre. Actually, the centre is now located at Pangyangan village, sub-regency of Pekutatan, Jembrana regency of Bali island. Nowadays, such the name is formally known as House of Breeding of bali Cattle Superior Breed. The agency is directly and officially controlled under

the Directorate General of Animal Husbandry of Jakarta. Fig 1. showed, herd of selected female bali cattle ready for breeding in order to get better quality both phenotypic and genotypic. Meanwhile, Figure 2 informed herd of bali cattle in difference age, grassing on native and introduced grasses at Pulukan to achieve better quality and quantity of bali cattle.

Moreover, Pulukan breeding centre is hundreds of hectare of high cost government land since Bali is small island and too difficult to get wide range of land, therefore, Pulukan is one of possibilities. In certain places around the capital city of Bali island of Denpasar the cost of land per unit area is the highest among Indonesia. Since Pulukan is away from the capital city of about 80 km western part, thus, once again Pulukan is one possible choice to avoid such a high cost for land area. In some instances, the bali cattle must be maintained as a purebred could be due to bali cattle do have some distinct-unique characteristics which have made them the cattle breed of choice in many parts of Indonesia. In more depth the fact is supported by Kusumaningsih (2002) who stated that some of the unique differences of bali cattle from other cattle which make them valuable assets in Indonesia for examples: Size-smaller than Zebu and European cattle. Color: strikingly uniform markings. Behaviour: timid and can become wild readily. Reproduction: high conception rate. Lactation: ability to stop lactating and survive a bad dry season. Feed utilization: better able to utilize low quality feed base. Heat tolerance: better heat tolerance than buffalo and other cattle. Water turnover: lower water turnover than *Bos taurus*. Meat quality: marked fat deposition sites and limited fat in muscle mass. Disease pattern: stated to be resistant to external and internal parasites except liver fluke, *Fasciola gigantica*. Increased resistance to

malignant catarrhal fever and Jembrana disease (Soeharsono *et al.*, 1995).

Establishment of Pulukan house of breeding centre could also be due to carry out vision, mission and some purposes that should be hold, for examples, increase genetic improvement and sustain local genius of bali cattle based on agribusiness economic system. Of course, such activity will invite other related sectors to be emerged. The idea is in general agreement with Sukmasari *et al.* (2002) who concluded that genetic trends of all traits in bali cattle were inconsistent, but the consistency can be increased if selection accurately done. Therefore, the Pulukan hold core task of sustain, breeding, genetic improvement, produce and spread out the production of superior bali cattle breed nationally to all area of Indonesia. In addition, recording, performance and progeny test, and breed certification are also other important activity that should be carried out day by day bases. Besides, development of such extension service boards of Pulukan, Sobangan and Nusa Penida aims to

increase society income, create new job, and animal protein availability.

Sobangan is a village part of Mengwi sub-regency of Badung regency, southern part of Bali. The village has been prepared as centre and development of purebred bali cattle by government of Badung regency particularly under control of the local department of animal husbandry. Such effort was started in 2008 on wide land of 9 hectare up to now. The area is employed for breeding as well as fattening of bali cattle by involving local farmers surrounding the village. In addition, the centre is also established for planting and growing local and introduce grasses such as, gamal (*Gliricidia sepium*) and elephant grass (*Pennisetum purpureum*). Small-simple industry of food processing is also could be introduced in this area. Slaughtering house also completed this area, however, the building is constructed next to the village of Mambal. Therefore, extension service as well as education process are really going on at the centre.



Figure 1. Herd of bali cattle on the field of Pulukan breeding centre of Jembrana Regency, Western Bali.

Establishment Of Bali Cattle Conservation Centre Of Nusa Penida Island

Nusa Penida is small separated island located at southeast part beyond the Bali Island. The island is belonged to

Klungkung regency of Bali province. Dry land is typical topography of such the Island, therefore, daily water need is the main problem for both agriculture and family usage. Due to such condition then, local grasses, shrubs and trees are

developed tremendously particularly during rainy season, and farmers use it as feedstuff for animals include bali cattle all year round.

Such excess feedstuff during the rainy season are thus stored and used for dry season. From long time ago up to now Nusa Penida Island has been recognized as central pure breeding of bali cattle.

One reason the Pulukan, Sobangan and Nusa Penida areas have been chosen as bali cattle breeding centre could be due to avoid dependency of meat and beef cattle import from other country to fulfill increase national meat demand. In addition, such fulfillment will cause exhausting numbers of population of bali cattle particularly calve, bull and heifer. This is in accordance to Anon (2002) that if demand of cattle meat originated from local cattle slaughtering, this will cause decrease population number particularly those for young-productive cattle breeds.

For example, from 1999 to 2001 Indonesia has imported 15-22% cattle meat demand due to increase number of such need and can not be fulfilled from local production. The fact is also supported by Anon (2009) who stated that development of breeding centre has been started from field actual fact of decrease number of bali cattle population due to slaughtering of productive heifer as well as uncontrol export from Bali island.

Particular reason for Nusa Penida island has been employed as conservation centre could be due to be free from certain diseases, and other important factors. Such the fact is in general agreement with Anon. (2008) who pointed out that the bali cattle of Nusa Penida island is declared to be free from four kind of diseases of the Jembrana, foot and mouth disease, anthrac and MCF.

Moreover, high reproduction value, excellent meat quality and produce vaccine of Jembrana disease are also an

important factors for conservation centre establishment.

Essense Of Udayana University, Bukit Jimbaran, Bali

Udayana University is the first, oldest and biggest among government university in Bali of Indonesia. As university who has number of honour titles, of course, they have big number of experts from diverse disciplines. Animal scientist of high reputation both national and international with sub-discipline of nutritionist, physiologist, geneticist, etc have carried out experiments by winning source of fund available by different kind of government and private agencies. Tremendous idea and research activity have been implemented and shared to both government and farmer by such prestigious agency through various related experts of study field (Nie and Wang, 2013)

Establishment of the breeding centers could also be supported by existence of number of experts from Udayana University as the oldest-government university in Bali. Such the fact is in accordance to Anon. (2008) who postulated that the important of Nusa Penida as conservation centre has been recommended by Udayana University experts joint collaborate with local researchers from department of animal husbandry of both Klungkung regency and Bali province. For example, researcher from Udayana University recommend ten hectare appropriate location for conservation centre and breeding of bali cattle at Bukit Mundi of Klumpu village, Nusa Penida island.

Role Of Directorate General And Local Department Of Animal Husbandry

Officially, Government of Indonesia has different kinds of ministry include the Ministry of Agriculture whereas Directorate General of Animal

Husbandry attached underneath them. Hand lengthening of such Directorate spread out in each province and regency of Indonesia. Even, in certain places it is extended until sub-regency and village based depending upon the need as well as urgency. Field worker and extension service to farmers is the main key in succeeding mission of the agency.

CONCLUSION AND SUGGESTION

Conclusions

Overall it could be concluded that government as a whole have played an important role in maintaining and sustaining the purebred bali cattle as draught and meat type cattle at certain suitable places in Bali to fulfill local and national daily meat requirement by establishing good collaboration with related government agency as well as farmers.

Suggestion

That is important to protect bali cattle pure in Bali and Nusa Penida island.

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