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Prospect development of local beef cattle from South Kalimantan as supporting to food sovereignty in Indonesia

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Abstract. Development production of Indonesia local cattle didn't balance increasing of consumption livestock in Indonesian so that's makes imports are still high both local beef production. Indonesian local cattle is one of cattle the largest contributed the national meat production of ruminant particular group of cattle so that the livestock has the potential to be developed as a profitable business if doing of farmer. One of advantages is potential areas in South Kalimantan mainly swamp lands was very large. It's one effort in national promoting food sovereignty programme and the provinces especially about introduction of Indonesian local cattle in the swamp area are also important. Availability of region in South Kalimantan spacious and great forage production, then prospects for cattle productivity there is huge so that's can even increase income for farmers. The programme more serious support from the governance of South Kalimantan province to develop Indonesian local cattle in swamp area and in that's a real policy for encouraging farmers to maintain Indonesian local cattle to make sustainable food in Indonesia.

1. Introduction

Efforts to realize national food sovereignty especially animal protein products of livestock are continuously improved by implementing programs to reduce national dependence on imported meat by seeking productivity and livestock population increase especially in Indonesia local cattle that had not been optimally developed in the region[1]. Increased productivity and population of Indonesian local cattle has been intensified over the past few years with various programmes such as Estrus Synchronization and Artificial Insemination (2013-2016) and Mandatory Cow Pregnant Breeding Cattle (SIWAB) implemented since 2017 until now. These programs aim to increase the population utilizing by Indonesian local cattle.

Increasing the potential for Indonesia local cattle is helping to meet the demand for beef in the domestic market is quite high and always increases from year after year. Indonesian fresh meat per capita consumption of 2011-2015 reached grow than average of 2.08 kgs per capita with 10.28%. The level of consumption of 2017 only increased slightly 0.6 percent, compared with 2016. But when compared with some neighboring countries, Indonesia is still very far behind example Singapore have per capita consumption of meat is 55 kgs per year while Philippine reaches 7 kgs per year[2].The



development population of Indonesian local cattle such as Kalimantan especially in South Kalimantan areas is very large. A few factors that support the development of Indonesian local cattle in South Kalimantan include potential nature and human resources the establishment of cattle production systems based on the potential for regional areas, and there is a technology, economic, social and partnership developed in collaboration between Government, Academician, Farmer and Businessmen sector.

The origin Indonesian cattle is a native Indonesian cattle that has always originated from the domestication of wild animals in Indonesia, not from imports cattle. One example of the original Indonesia cattle among others Bali cattle, Madura cattle, Pesisir cattle, and Katingancattle. While the sense of Indonesia local cattle is a cattle that has its own distinct characteristics with the same cattle from imported cattle due to the breeding process and selection conducted by Indonesian farmers. Indonesian local cattle have characteristics small cattle with a size that is almost the same weight as some other small cattle in Africa and India. These data also show that body weight variation on various age levels in Bali cattle is considerable, so the chance of development through selection will still be effective. The results of Talib *et al.*[3] shows that one of Indonesia local cattle such as Ongole cross-breed cattle has an average body weight of 250-300 kg with the age of 1.5 - 2 years that's same result research with Hastuti[4]. Male carcass cattle weights produced 50.46% [5] while the productivity in cattle associated distance between from 15.74 months and service per conception 1.67 [6]. Indonesian local cattle had some advantages such as having good adaptation level in tropical, good palatability to low-quality feed, relatively resistant to internal and external parasite, good productivity and carcasses ranging from 49 to 55% [7,8,9,10,11]. This showed the superior performance of Indonesian local cattle but the most important thing is that this cattle is the Indonesian germplasm that became the treasure of the Indonesia[12].

South Kalimantan with its capital city of Banjarmasin one of province in Kalimantan island have a slope of soil with 4 classification class shows that as much as 43.05% at South Kalimantan Province has a slope of 0-2% land. The of South Kalimantan area according to the height class is divided into 6 classes of elevation indicates the area of South Kalimantan mostly located in the class height of 25-100 m above of 31.29% from sea surface. Land in the area of South Kalimantan Province is mostly forest with details of dense forest (780,319 Ha), forest of grove (377,774 Ha) , and swamp forest (90,060 Ha), forest type (352,840 Ha) of soil covering 870,314 Ha, In the form of grass (50,119 Ha) and for others (83.014). While the use for rice fields 413,107 Ha, plantations 437,037 ha and for the township of 57,903 Ha and for Tegalan (48,612 Ha). Government data in South Kalimantan province showed swampland area reached 235,677 hectares and that extent swampland that has been planted with food crops reaches 78,544 hectares and other potential land that can be utilized for food in swamps reach 90,000-hectare Lebak (Livestock office Service of South Kalimantan[13]).

This article aims to examine the potentials and strategies of developing Indonesian local beef cattle in South Kalimantan that are related to the development of meat productivity as an animal protein food in Indonesia. The information presented is expected to be an input in formulating models of development and institutional of beef cattle business that efficiently and effectively to realize Indonesian food sovereignty especially meat production.

2. Materials and methods

In this research using literature study method based on data onto potential of South Kalimantan beef cattle period 2008-2016 from Livestock Service of South Kalimantan Province and with direct observation and discussion with breeder and livestock policy at Livestock Service Office of South Kalimantan Province. Activities lasted for 6 (six) months from March of August 2017. The duration of this activity is related to data collection and discussion activities with the respondents. The data sources of this activity consist of Government Agency's Performance Accountability Report. Livestock Service Office of South Kalimantan Province 2008-2016, Livestock Statistics Data of South Kalimantan Year 2008-2016, Location Location Quotient (LQ) Cattle Year 2008-2016, Government

Policy South Kalimantan Province, questionnaire and discussion with respondents (farmer, academician, researcher and businessmen).

3. Results and discussion

3.1. Potency of cattle in South Kalimantan

South Kalimantan as one of the areas in tropical climate has variation in potential and condition of region that can rely on agriculture sector as supporting of regional economy because contribution to agriculture sector to regional economy is one of the biggest for regional income. The contribution to the agriculture sector (food crops, horticulture, livestock, and plantation) to the total area of South Kalimantan is around 22.77%, of which 2-3% comes from the livestock sub-sector. The achievement of livestock population of South Kalimantan over the last five years especially in view of the development from 2013 to 2015 has experienced significant growth.

South Kalimantan Province continues to play an active role to encourage and develop the livestock sector in this area. Various policies are done maximally to create a conducive business for both breeders, as well as for investors who are willing to invest their capital in South Kalimantan. Some of the programme implemented include the intensification of natural mating with provision of bulls and enhancement of artificial insemination, agribusiness development, strengthening the institutions of artificial insemination center, developing cattle in plantation and agriculture for the provision of organic fertilizer and bioenergy, development of cattle breeding, cultivation development cattle and Development of feed and territorial. The pattern of development of beef cattle farming is in according with the opinion of Dwiyanto [14]; Talib and Noor[15]; Mayulu *et al.* [16]; Priyanto [17]; Matondang and Rusdiana [18] stated that efforts to increase the productivity of beef cattle with several programme such as the utilization of local resources, intensive breeding, with a business development base focused on the downstream industry, the utilization of integrated feeding potential for food crops, plantations and forestry and has led to semi commercialventures as well as the addition of technological innovations towards the commercialization of livestock product development.

3.2. Development Beef Cattle in South Kalimantan

The development of Indonesian local beef cattle in South Kalimantan has considerable potential. This is greatly supported by the existence of geographical conditions for which there are extensive forage for pastures, the potential for swamp areas and integration between plantations, agriculture, and cattle. Based on the potential for human resources, natural resources and the level of its utilization and attention to livestock commodities and marketing situation, in general, business prospects and opportunities for the development of livestock sector in South Kalimantan are very likely to be developed especially beef cattle that came from Indonesia local cattle. Some of Indonesia local cattle well-developed in South Kalimantan included Bali cattle, Ongole cross-breed cattle (PO), Sumba Ongole cross-breed (SO), Madura cattle and Simmental Bali cross-breed (Simba)

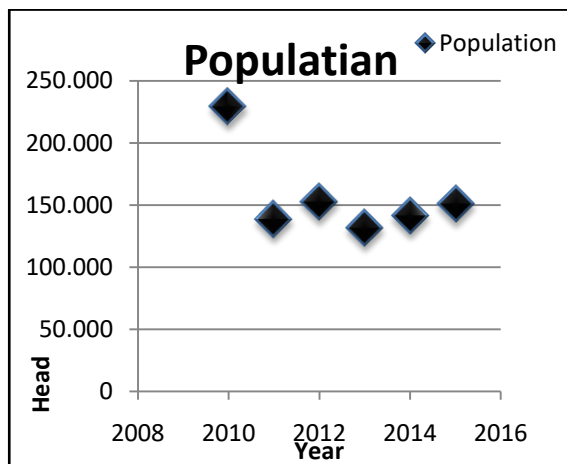


Figure 1. Beef cattle in South Kalimantan (Livestock Office Service of South Kalimantan, 2015).

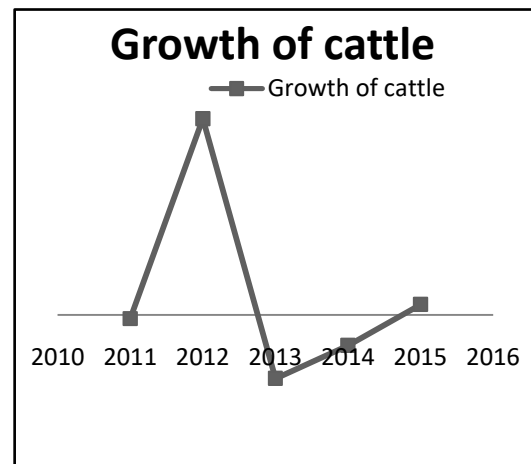


Figure 2. Graphic of growth addition beef cattle population in South Kalimantan.

Carrying capacity of potential land for cattle especially Bali cattle can still be developed up to 675,000 Livestock Units or equivalent to 877,500 Bali cattle while the population of beef cattle in South Kalimantan are 150,875 or 17.19%, so it's still open the potential to increase the number of beef cattle population in South Kalimantan. Based on this capacity, South Kalimantan are still open to increasing the population of 726,625 heads [19].

Land and climate suitability in South Kalimantan area are suitable to be developed Sundaicus Bos breed cattle, Bos in discus and Cross-breed, not covered by buffalo, goat and livestock engages and dairy cattle. According to Mukson *et al.*, [20] opportunities for cattle development in the outer islands of Java are very large, one of them in Kalimantan, it is related to land conditions and topography and the availability of forage for abundant cattle make the potential as a center cattle in Indonesia

The development of cattle in South Kalimantan is aimed at increasing the local cattle population of Indonesia by utilizing the natural potential that is owned by considering environmental sustainability. The potential for the land is sufficient to accommodate 877,500 heads of cattle for cattle fed and the utilization of local feed waste from agricultural waste (corn and rice straw), plantation (palm oil) was expected to contribute in the provision of feed for 300,000 head of cattle per day. South Kalimantan seeks to develop the development of beef cattle breeding based on the development of areas such as cattle fattening development areas, the development of integrated areas of cattle with plantations and the development of breeding or breeding areas. According to Saputra *et al.* [21], efforts to develop beef cattle based on the development of the area are able to support the increase of beef cattle productivity in Aceh Province. Until now, based on data into from governance, development of local beef cattle in South Kalimantan makes this area as one supplier of beef cattle and meat to neighboring areas such as Central Kalimantan and East Kalimantan province [22].

3.3. Productivity of Beef Cattle in Swamp Land South Kalimantan

The productivity of Indonesia local n beef cattle in South Kalimantan swamp land is relatively positive about population growth until 2015, 150,875 heads in South Kalimantan. In addition reports on farmers as well as direct observation in the field, the weight of bull of Bali cattle kept in swamps at 4 months, can reach 260 kgs (at the beginning of maintenance around 190 kg, so ADG (average daily gain), ranges from 0.58 kg/day). This does not close the possibility could be more because if this is done with good management then the weight of the cattle can reach 280 kgs or more.

The reproductive factor, the local cow of Indonesian cattle has no difficulty in running the breeding program because, besides the existence of natural mating, AI (artificial insemination) has

also developed in South Kalimantan. However, the attention on ranchers in the swamp area of South Kalimantan is the lack of supervision of recording. So, we often encounter breeders that use the estimation system in the form of mating or weight of cattle to be sold. According to Anggraeny *et al.* [23], the performance of Indonesian local cattle reproduction in South Kalimantan is relatively better especially Calving Interval (CI) compared to CI value from Brahmancross breeder in East Java. In terms of the productivity of Indonesian local beef cattle development there is no difference between the maintenance in the swamp and dry land, the problem is the system of sales, because it is related to the watery swamp conditions, the existing transportation like a boat is very limited, so sometimes to overcome it, farmers will jointly sell cattle or sell in the form of carcasses because they themselves do the slaughtering.

The Government of South Kalimantan Province has also undertaken several programs as part of the development of Indonesian local cattle in swamp areas with the aim of making South Kalimantan as a supplier of cattle seed for other areas in South Kalimantan self-area and Central Kalimantan to East Kalimantan. Model of breeding and fattening beef cattle has grown in South Kalimantan with the growth centers of livestock business such as Bali development reproduction center of Barito Kuala regency, cattle breeding center covers Tanah Laut and Barito Kuala regency, while the center of beef cattle development includes Banjar, Tanah Laut, Balangan, Tapin and Hulu Sungai Tengah Regency [24].

3.4. Management Pattern of Beef Cattle in Swamp Land

Management of local beef cattle raising by farmers in South Kalimantan based on observations made consists of 3 systems namely extensive, semi-intensive and intensive. Differences between this system based on the location of the breeder are located. The following will show some maintenance management patterns that farmers can do in the swamp area.

3.4.1. Extensive system. This extensive system is a local beef cattle raising system that a small proportion of South Kalimantan people still applied. This maintenance method is one of the many maintenance systems applied for the people farmers in Indonesia [25]. Usually, farmers that used this system are a breeder who is in the area of pasture grazing area such as in the Tanah Laut, Tanah Bumbu and in the Hulu Sungai Tengah regency. In this system, the cattle are allowed to feed themselves but at night the cattle is stacked (but very rarely the ranchers do the warehouse) and in the morning the cattle is issued and left in the pasture. The application of this extensive system is widely used in the swamp area in Hulu Sungai Tengah and Hulu Sungai Utara regency. Farmer systems in the swamp area usually using this system during the dry season.

3.4.2. Semi-intensive system. This semi-intensive system is used by some cattle ranchers in South Kalimantan. This pattern of maintenance example in the morning, the cattle is brought to a place that has a pasture, while in the afternoon, the cattle is brought back to the cage [26]; Susanti *et al.* [27]. In swampy areas, this pattern is applied by farmers from Barito Kuala regency as most of these areas have swamps pasture. The potential for swamp land with forage conditions derived from swamp plants can still be converted by Bali cattle, Ongole cross-breed cattle and buffalo for feed [28].

3.4.3. Intensive system. This intensive system is mostly applied by farmers in South Kalimantan, both on dry land and in wet areas (however in swamp areas only a small percentage example in unlogged swamp areas). Farmer are looking for breeding with forage for cattle while cattle are left in cages. The privileges of intensive systems farmer can focus on caring for cattle as well as health and safety awake [29]. However, not all farmers of this system are using good management such as cage management, recording until breeding and mating arrangement. The farmer of this system is a breeder specializing in development systems rarely using this system in breeding programme. Farmers in the swamp area using this system are located in the Wanaraya area (Barito Kuala regency). In swamp, areas the use of this system is very rare. So it needs to be explained and given further information about the breeder.

This is related to the swamps that cause difficulties breeders in building the cage. Some of the forage feeds used by farmers to be given to Bali cattle in swamplands vary considerably from padi *hyiang* (likely rice plant but grasses), *kumpai minyak* (grassesgroup), *parupuk laki* and *bini*(regional term for grasses swamp).

4. Conclusions

The development of beef cattle production especially Indonesian local cattle in South Kalimantan has a very big prospect to be improved and can be used as part of sustainable economic growth to improve the welfare of farmers in South Kalimantan. Utilization of the potential for geography, topography and natural conditions of South Kalimantan accompanied by government programme support to make the swamp areas in South Kalimantan into cattle development centers so that the concept of cattle development in the region can be realized. The potential for South Kalimantan as the center of beef cattle production in Kalimantan can be realized with the coordination of farmers, government, academia, researchers and businessmen sector aimed at creating breeding and development of cattle agribusiness patterned as business partners for the establishment of a better community economy. The development of the areas into a breeding center, purification cattle by utilizing the condition of South Kalimantan province which mostly has wetland and swamp land is expected to increase the production of beef cattle with based Indonesian local cattle in Kalimantan so as to make the economy in South Kalimantan into an economy based sustainable economic system.

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References

- [1] Suryana and M Yasin 2014 Prospect of integrated palm oil-cattle development in South Kalimantan. *J. Litbang Pertanian* **34(1)** 9-18.
- [2] Directorate General of Livestock and Veterinary, Agricultural Ministry, Indonesia. 2015. Report of accountability working of office service in 2015. Agricultural Ministry. Jakarta.
- [3] Talib, C, A Bamualim, and A.Pohan 1998 Problem of Bali cattle development in maintenance in grazing area. *Prosiding of National Conference Livestock and Veterinary*. Bogor, 1-2 December 1998:248-254.
- [4] Hastuti, M 2002. Performance of Ongole male cross breed give supplementation withbioplus. Undergraduate thesis. Gadjah Mada University. Yogyakarta.
- [5] Iswanto, Y 2003 Production of carcass and non-carcass of Ongole cross breed give fed king grass and concentrate with probiotic addition. Undergraduate thesis. Gadjah Mada University. Yogyakarta.
- [6] Hidayat, N 2003 Estimation of natural increase of beef cattle in Majalengka Regency, East Java. Undergraduate thesis. Gadjah Mada University. Yogyakarta.
- [7] Talib, C 2002 Bali cattle in germ source areas and opportunities and development chance. *Wartazoa* **12(3)** 100-107.
- [8] Astuti, M 2004 Potential and diversity of genetic resources of Ongole cross breed. *Wartazoa* **14(4)** 30-39.
- [9] Abdullah, M.A.N, R.R. Noor, H. Martojo, D.D. Solihin, and E. Handiwirawan 2006 The phenotypic variability of Aceh cattle in Nanggroe Aceh Darussalam. *J. Indon.Trop. Anim. Agric* **32(1)**11-21.
- [10] Rahmatullah, S N, Jakarta, Ronny R. Noor. 2016. Identification of growth hormone gene variation in exon region at Indonesian local cattle based on PCR-sscp method. *Biodiversitas* **17(2)** 492-497.

- [11] Sengkey, N.M, A.H.S. Salendu, E. Wantasen, P.O.V. Waleleng 2017 Potential development of beef cattle in Subdistrict West Tampaso. *Zootek* **37(2)** 350 – 359.
- [12] Chamdi, A N. 2005. The characteristics of genetic resource of Bali cattle (bos-bibos banteng) and the alternative of its conservation method. *Biodiversitas* **6(1)** 70-75.
- [13] Livestock Office Service of South Kalimantan. 2016. Report of accountability working of office service in 2016. South Kalimantan Province. Banjarbaru.
- [14] Dwiyanto, K. 2008. Utilization of local resources and technology innovation in supporting the development of beef cattle in Indonesia. *J. Pengembangan Inovasi Pertanian* **1(3)** 173-188.
- [15] Talib, C and Y.G. Noor 2008 Beef cattle production in supporting Indonesia food safety and security. *Prosiding of National Conference Livestock and Veterinary*. 2008: 44-50.
- [16] Mayulu, H, Sunarso, I. Sutrisno, and Sunarso 2010 Policy on the development of beef cattle in Indonesia. *J. Litbang Pertanian* **29(1)** 34-41.
- [17] Priyanto, D 2011 The strategy of beef cattle business in support of beef and buffalo self-sufficiency programme in 2014. *J. Litbang Pertanian* **30(3)** 108-116.
- [18] Matondang, R H and S. Rusdiana 2013 Strategic steps in achieving beef self-sufficiency in 2014. *J. Litbang Pertanian* **32(3)** 131-139.
- [19] Biyatmoko, D 2015 Efforts to improve availability forage feed to livestock and carrying capacity through planting three strata forage system. *Ziraa'ah* **40(3)** 184-191.
- [20] Mukson, W. Roessali and H. Setiyawan 2014 Analysis development regional of cattle beef in support meat self-sufficiency in central Java. *J. Peternakan Indonesia* **16(1)** 26-32.
- [21] Saputra, H, A. Daryanto, D.S. Hendrawan 2009 Strategy of development of beef cattle with insight of agribusiness in Aceh Province. *J. Manajemen dan Agribisnis* **6(2)** 152-162.
- [22] Hamdan, A, E.S. Rohaeni, A. Subhan 2010 Characteristics of swamp buffalo as germ plasm in South Kalimantan. *Prosiding of National Conference Buffalo* 2010: 57-64.
- [23] Anggraeny, Y N, Mariyono, P.W. Prihandini 2010 Reproductive performance of brahman cross in three provinces in Indonesia: case study in East Java, Central Java, and South Kalimantan. *Prosiding of National Conference Livestock and Veterinary* 2010: 73-79.
- [24] Livestock Office Service of South Kalimantan 2015 Dynamic of Livestock Population in South Kalimantan. South Kalimantan Province. Banjarbaru.
- [25] Elly, F H, B.M. Sinaga, S.U. Kuntjoro, N. Kusnadi 2008 Development of cattle business through integration of cattle-plants in North Sulawesi. *J. Litbang Pertanian* **27(2)** 63 – 68.
- [26] Prasetya, A 2011 Management of beef cattle in BPTP Rambatan, West Sumatera. Thesis. Bogor Agricultural University 1-65.
- [27] Susanti, A E, N. Ngadiyono, Sumadi 2015 Output estimation of beef cattle in tidal lowland Banyuasin regency South Sumatera Province. *J. Lahan Suboptimal* **4(2)** 99-109.
- [28] Rohaeni, ES 2014 Analysis potency of areas for development beef cattle in Tanah Laut Regency, South Kalimantan. *Prosiding of National Conference Innovation and Technology Agriculture Specific Location* 2014: 493-501.
- [29] Nurdin, A S, A. Fariani, Sriati 2014 Development of ruminants based on availability of forage and labor in Palembang city of South Sumatera. *J. Peternakan Sriwijaya* **3(2)** 1 -11.