Exploration Data of Animal Protein Fulfillment from Small Ruminant

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Abstract – Sheep and Goats or Kado (Kado is Indonesian language abbreviation of Kambing/Goats and Domba/Sheep) have the potential to be developed as the animal protein producer. Demand of Kado is quite big for everyday needs such as, aqiqah/slaughter for celebrating new baby born, qurban/slaughter for celebrating Islamic annual celebration called Idul Adh‘, party, and for resale through: breeder, animal market and slaughterhouse. The research aims are exploring the data of animal protein compliance sourced from Kado. The research levels consist of: data collection (livestock population, research related to development of “Kado” industry) to farmers and related offices, making data repository, data exploration, system requirement analysis through survey and interview to respondent and the development of web-based livestock data collection system. The results obtained are: Kado have a big poteney to be developed; Recording of data by farmers is still manual and depends on the type of business which is done; The Livestock/Agriculture Service collects livestock population data of some commodities containing the Kado from each village once annually; and a web-based Sispopter has been developed, which can be used by village staff and related agency staff to collect livestock population (which includes Kado) online. The data collected by farmers and the Animal Husbandry Staff Agency/Agriculture should more improve the quality and quantity, so that it can better support decision-making.

Keywords – Data exploration, Goat, Protein, Sheep, System of data collection.

I. INTRODUCTION

A nutritional adequacy becomes one of the important factors that must be fully concerned in producing human resource quality. One of the nutrients that play an important role is the protein derived from animals or livestock known as animal protein. Some animal products that can supply quality protein are: eggs, milk and meat. The needs of milk and meat at this time mostly filled from cattle (dairy cattle and beef cattle), whereas there are other ruminant livestock that has the potential to be developed that is small ruminants. Types of small ruminants that have the potential to be developed are goats and sheep, otherwise known as Kado.

Kado livestock business is one effort that has the potential to be developed to reduce dependence on other countries. At present, the Kado livestock business is still mostly done by small-scale farmers, because it does not require large capital and large business fields, easy maintenance, commonly in cages or removed on empty land or natural grasslands if available, the food is very simple which is widely available around the house (grass), its development is relatively faster, and it is expected to give birth every year with twins, can be used as a saving if at any time require funds/capital, not difficult to sell because of demand Kado meat, meat and animal qurban continue to increase every year.

Bunyamin [2] explains that the market for sheep can be classified into two main groups: (1). The market for direct consumers includes consumer of qurban/slaughter for celebrating Islamic annual celebration called Idul Adh‘, aqiqah/slaughter for celebrating new baby born, parties and other consumers who buy sheep for their own purposes, not for resale; (2). Markets for traders include slaughterhouses, satay traders, fast-food for aqikah businessmen, meat retailers and other consumers who buy sheep for resale.

One type of local sheep that has the potential to be developed and made meat producers is Garut sheep. Garut sheep has a good potential to be developed as a source of meat compared to local sheep or other sheep that exist in Indonesia and it has a unique advantage that can be a tourist attraction area [9].

Currently the development of sheep is still done by some small scale breeders with simple management. If sheep are expected to be the alternative source of ruminant meat other than cattle, it is necessary to cultivate an industrial scale as well as poultry.

Ministry of Agriculture of the Republic of Indonesia [3] argued that for the development of sheep agribusiness, the business needs investment support from the government, private, and community farmers covering aspects, there are: animal health services; supporting the provision of breed superior and parent quality; research, assessment and development activities related to feed and maintenance management aspects; institutional development to accelerate the flow of information, marketing, promotion, capital; provision of infrastructure to facilitate the flow of input-output goods and product marketing; and availability of animal health laboratory, feed and reproduction, preparation of livestock business and the spatial layout for the development of livestock is not disturbed by social, legal, and environmental problems.

These seven aspects are very important in relation to support the success of the sheep agribusiness program. Besides, various policies needed for the development and improvement of sheep quality include: Simplification of procedures and requirements for investment in the development of breeding farms; Provision of profit sharing credits and Providing information (prices and technology).

Kado meat as a source of animal food resulting from the Kado agribusiness must have the best quality and must be health for consumers. Kado. It needs to be done a good
cultivation by applying Good Farming Practice (GFP) that includes facilities, production process, preservation and supervision. The implementation of GFP is expected to produce food products from healthy livestock, halal which is started from upstream (production) to downstream (processing). The growing demand for healthy and quality meat, and also with a considerable amount of slaughtery, so it has an impact on the development of sheep breeding opportunities for farmers and industry, but the high demand and growing of these businesses can also result in the depletion of productive Kado that are cut off if they are not offset by program to supply meat. In order to anticipate these conditions, it is necessary to do the integration of meat production business of young Kado or fattening Kado meat in general with targeted and sustainable nursery program.

Margawati et al. [15] stated that quantitatively and genetically, Garut sheep is potential as meat-producing livestock. Composite sheep as the result of balitnak research has lower fat content than Garut sheep, a potential sheep as a producer of quality food. Khotijah et al. [13] suggested that young sheep that got rations containing sunflower oil produce meat that is soft and good quality. Khotijah et al. [11] reported that local feeds of Onggok and Coconut Cake have the potential to be used as feed in breeding programs. Application of long-chain unsaturated oil supplementation technology in reproductive or nursery rations can increase ovulation rate and pregnancy percentage [12], increase the birth of twins and males in Garut sheep, so that the prolific nature of sheep can be raised and developed to increase productivity [14].

Kardiana and Khotijah [10] have conducted preliminary research on data mining implementation in estimating local sheep body weight using CART (Classification and Regression Tree) method using Salford Predictive Modeling (SPM) software. It was found that the content of dry matter derived from coconut meal meal was the dominant indicator of the increase of body weight.

In order to answer the above problems, it is necessary to explore animal protein fulfillment data from Kado that will provide valuable input for decision maker. One of the most important priorities is the availability of valid livestock population data. Therefore, it needs a way of data collection that is easy, fast and accurate. This research was conducted to build the population data collection system and the excavation of livestock potential in which it contains Kado.

II. THE RESEARCH METHODS

The research stages consist of:

1. Data collection (livestock population, research related to development of “kado” industry)
2. Absenteeism: this was evident in practical sessions 
   Creation of data repository and data exploration.
3. Survey and interview to respondent to analyze system requirement.
4. Development of web-based population data collection systems.

III. RESULT AND DISCUSSION

Data collection has been done to: Bogor City Agricultural Service, Animal Husbandry Service of West Java Province, Fishery and Marine Garut Regency; Agrowisata Bumi Merapi, Kaliurang, Yogyakarta; Official Small Ruminant Seksyen Ternakan, Taman Pertanian, University of Putera Malaysia; Animal Husbandry and Animal Health Service of Central Java Province; Agriculture and Fishery Service of Wonosobo Regency; Wonosobo sheep breeder group "Rimba Berkarya" in Suren Gede, Wonosobo regency; Ruminant Livestock Breeding and Breeding Center, Kaligesing Satker, Tlogoguwo Village, Kaligesing Sub-district, Purworejo District; Loka Penelitian Sei Putih, Deli Serdang Regency, North Sumatra Province; Laboratory of Meat and Work Field (Dagker) Farm, Faculty of Animal Science, Bogor Agricultural University; Tegal Waru Farm, Ciamea, Bogor District; and Dairy Goat Breeder Group Neqtasari, Pasirjambu District Bandung regency.

The data obtained are:

- Livestock Population In 2016 from 58 Villages In Bogor City.
- Livestock population at Laboratory of Meat and Work Field Farm, Faculty of Animal Science Bogor Agricultural University.
- Materials on livestock data collection, calculation of meat production, milk production calculation and livestock technical parameters [1], livestock population dynamics [5], livestock data collection methodology [7], reporting and presentation of statistical data on livestock [8] and livestock commodities in livestock statistics [6].
- Policies on regulating the availability of livestock in Indonesia [4].
- Livestock Population by Type of Livestock from 22 Subdistricts in Deli Serdang District of North Sumatera Province in 2016.
- Number of Goat Population of Goat Cut Sei Putih in Deli Serdang District of North Sumatera Province.
The collected research data is then processed into the data store/database using extraction, transformation, and loading.

Based on the results of surveys and interviews that have been conducted to related parties in order to collect data and analyze the needs of the system, obtained information about:

- how data collection is done by farmers and related offices.
- business process of data collection of livestock that has been done.
- which data is collected, processed, and reported to the next stage.
- what are the needs that should be provided by the system.
- what outputs should the system produce.
- who are the users of the system
- Village staff can import files to the system so they do not enter data again and can revise online.
- Village staff can export data from online systems so they have archived data and for back-up purposes.
- what facilities are needed to support the smoothness of data entry and outcome expenditure.

Breeders have conducted data collection of livestock populations that are maintained manually and not periodically containing data: males, breeds, nations, sources, sex, Date-Month-Year, birth weight (gr), birth type (twins 1, 2). An example of a data collection form used at the Meat and Work Field Laboratory of Farm, Faculty of Animal Science Bogor Agricultural University. As for the other farms, the data collected is adjusted to the needs of each. Therefore, the reason cannot be accumulated standardization of data collected.

Bogor City Agricultural Service conducted a collection of livestock population through the stages:
1. Village Head assign Village staff to conduct data collection of livestock owners in each village.
2. Village staff conducts surveys and data collection to livestock owners.
3. Village staff fills Form 1, Form 2 and Form 3 in writing or entry to Microsoft Excel.
4. Village staff requested the signatures of validation of Form 1, Form 2 and Form 3 that have been filled in to the Village Head.
5. Village staff sends Form 1, Form 2 and Form 3 which has been approved by the Village Head and its softfile (if any) to Bogor City Agricultural Service Staff.
6. After Form 1, Form 2 and Form 3 from 58 Villages are gathered, Bogor City Agricultural Service staff compiles to Livestock Population Data Per District in Bogor City.
7. Bogor City Agricultural Service staff follows the activities of verification and validation of data of livestock population dynamics held by the Animal Husbandry and Animal Health Service of West Java Province, to finalize the population data adjusted with the previous year's data and applicable parameters.
8. Bogor City Agricultural Service staff conducted data of livestock population per sub-district in Bogor City to the web of Animal Husbandry and Animal Health Service of West Java Province along with reporting population dynamics containing data: cutting; inclusion of various livestock between districts, the expenditure of various cattle to the western province of Java, as well as the production of meat, eggs and milk.

Form 1, Form 2, and Form 3, respectively can be seen in Figure 1, Figure 2 and Figure 3 while the Livestock Population Data Per District in Bogor City can be seen in Figure 4.
Given the number of villages handled quite a lot, the data collected at the Animal Husbandry, Fisheries and Marine Service of Garut Regency, Livestock and Animal Health Service of Central Java Province, Agriculture and Fisheries Service Wonosobo Regency, and the Animal Husbandry Service of Deli Serdang District North Sumatra Province, using Form 1, Form 2 and Form 3 as in the Bogor City Agricultural Service, but only records the cumulative number of each commodity livestock conducted by the staffing in charge of several districts. Data collection to the next stage, the type of data is relatively the same. For that reason the existence of media that can help data collection from village level easily, fast and accurate is needed.
Answering these needs and in accordance with the needs analysis system in the previous stage, then this research has resulted information system of population livestock data collection web-based. This system is used by Village Staff and District Officers associated with livestock population data collection to update data online and realtime so that the results can be accessed by other related parties.

The advantages gained if implementing a system that has been built is:

- Cut the time needed for village staff to send reports of livestock population data to the Bogor City Agricultural Service because they only open the web Sispopter then import data through the menu that has been provided. Currently, the average time required by Village staff in Kota Bogor to send data to the Agriculture Agency for 4 hours. If using Sispopter, it only takes 5 minutes (Hosted by PT AL AXIATA Tbk, Download Speed 30.17 Mbps, Upload Speed 5.85 Mbps).
- Eliminating the need for time for Bogor City Agricultural Office staff to compile Form 1, Form 2 and Form 3 from 68 Villages collected to Livestock Population Data Per Subdistrict in Bogor City because this stage has been automatically done by the system. It currently takes about 8 hours.
- Digital documentation of managed data collection can be done accurately and up to date so that at any time needed easy to obtain because the system provides facilities import and export population data "to and from" the system so that faster, efficient and easy.
- If each staff of the relevant staff uses this system, it will quickly identify the national level of livestock population due to the nationally integrated system.

IV. CONCLUSION

Conclusions obtained are:
1. Kado have considerable potential to be developed
2. Animal Husbondry/Agriculture Agency collect data of livestock population of some commodities containing the Kado from every Village every year.
3. Recording data by farmers is still manual and depends on the type of business it does.
4. A web-based Sispopter has been produced, which can be used by Village staff and related Agency staff to collect the population of livestock (containing the Kado) online.
5. The test results, the system has reduced the data transmission time previously averaged for from 4 hours to 5 minutes and eliminates the compilation time of data to the Livestock Population Data Per sub district which previously took about 8 hours.
6. Investment from government, private, and community farmers in the development of livestock agribusiness needs for various aspects.
7. The data collected by farmers and the staff of Animal Husbandry/Agriculture should more improve the quality and quantity, so that it can better support decision-making.

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REFERENCES


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