The role and effort of Jambi Research and Development Board to preserve genetic resources in Jambi Province

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Abstract. Jambi Province has an extraordinary treasure of Genetic Resources. This fact is supported by geographic conditions and supported by four national parks. Jambi Province has supported the use and protection of genetic resources, one of its efforts is to establish a Regional Commission on Genetic Resources. As a chief executive of the daily implementation of this commission, Research and Regional Development Board (Balitbangda) through its duty conducting study and research activities because if not managed well so the availability of genetic resources be threatened. This study aims to determine the role of Balitbangda of Jambi Province to preserve the genetic resources in Jambi Province. This research is qualitative research with a phenomenological approach. This research was carried out at Balitbangda Jambi as a chief executive of the daily implementation of The Regional Commission in Jambi Province. The sampling technique using purposive random sampling and types of data used are primary and secondary data collected by in-depth interviews and document searches. The results showed that the role of Balitbangda in Jambi Province in its efforts to preserve genetic resources were conducting research and development activities, active in the Regional Commission of Genetic Resources, cooperated with competent institutions, conducted seminars on the results of studies, socialized to teachers/education staff in the district/city about the genetic resources, and supported the acceleration of registration of geographical indications of Pineapple Tangkit Baru. The roles were still not optimal because there are still obstacles in the implementation.

Keywords: Balitbangda, Genetic Resources, Jambi, Preservation.

1. Introduction

Genetic Resources has become a national and international issue which needs to be maintained and managed so that there is no extinction. The Convention on Biological Diversity (CBD), Genetic Resources (SDG) are defined as genetic material that has real or potential value (the genetic material of actual or potential value) [1]. The genetic material is material from plants, animals, microorganisms or other bodies containing functional inheritance units (heredity). Thus, it is clear that when discussing genetic resources, what is discussed is the economic aspects of the intended plant and animal resources. Commercial potential involving genetic resources and traditional knowledge has developed very rapidly along with the development of the biotechnology industry that encourages the development of economic potential, utilization, and commercialization of genetic resources.

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The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) explains that genetic resources are the real or potential value of plants for food and agriculture. Genetic resource is a character of plants or animals that can be inherited, can be useful or has the potential to be used by humans, which contains qualities that can provide values for components of biodiversity such as ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values such biodiversity and its components.

Theoretically, Kameri-Mbote [2] defines genetic resources as forming the physical basis of heredity and the provider of genetic diversity that exists in a population or species. Genetic resources are a source of traits that can be utilized and developed for plant genetic improvement to create superior types or new cultivars to meet the needs of mankind. Without the sources of genes, the effort to obtain cultivars that are more suitable for human needs will not succeed. The more diverse the genetic source, the greater the chance to assemble the desired new varieties [3].

Indonesia is a biodiversity-rich country with high-value genetic resources. Jambi Province is an area that also rich in genetic resources as examples of food crops, horticulture, plantations and superior livestock which are spread throughout the region. This is supported by the geographical conditions of Jambi Province which have four national parks namely Kerinci Seblat National Park, Bukit 30 National Park, Bukit 12 National Park and Berbak National Park and 7 nature reserves. In the national park there are various types of flora and fauna that are protected and endangered because: 1) low of population, 2) the distribution area is narrow or endemic, 3) the species of peak predator, 4) the type of megaherbivores, 5) the type breed in groups, 6) the type that migrates. The National Park area is found with rare species such as Sumatran Tiger, Pinus strain Kerinci, etc. The genetic resources need to be preserved as the assets and regional germplasm and can be used as a source of genetic diversity and as a parent material for crossing in future varieties improvement programs.

Challenges in the management and preservation of genetic resources in Jambi Province include not all genetic resources being explored, even some species that are threatened with extinction are not all known, genetic resource management is not yet participatory and integrated, habitat preservation to overcome the extinction of genetic resources is not optimal, needs and community dependence on genetic resources to continue their lives increased, climate change that can threaten the availability of genetic resources, global warming, and natural disasters, even data and information about genetic resources in Jambi Province were still very lacking and have not been collected well can spur the erosion of the availability of genetic resources.

To overcome those challenges, The Research and Regional Development Board (Balitbangda) of Jambi Province took a very strategic role in efforts to utilize and preserve genetic resources. Balitbangda realizes that genetic resources have an important value and its advantages intended for the welfare of society. In this case, Balitbangda as a research institution carried out studies and researches related to genetic resources through research activities. In its implementation, Balitbangda is also faced with challenges to utilize and preserve SDG in Jambi Province.

According to Abu Ahmadi [4], the role is a complex human expectation of the way individuals behave and act in certain situations based on their status and social function. According to The Indonesia Dictionary [5], the role comes from the role word namely showman, then something that becomes part or holder of leadership. While Soerjono Soekanto [6] states the role is a dynamic aspect of position (status) if a person carries out his rights and obligations following his position it means he carries out a role. From some of the meanings above, it can be concluded that the role is an attitude or behavior expected by many people or groups of people towards someone who has a certain status or position.

Anderson Carter in Andarmoyo [7] mentions characteristics of role include: (a) Organized, that is the interaction, (b) There are limitations in carrying out tasks and function, and (c) There are differences and specificities. In this context, it can be interpreted that the role does not mean as individual rights and obligations, but the duties and authority of Balitbangda as a Research and Regional Development Board.
2. Methods

2.1. Scope of Research
The focus of the research is the role and efforts of The Research and Regional Development Board (Balitbangda) to preserve genetic resources in Jambi Province. This research was conducted in the office of Balitbangda were located in Telanaipura District from April to July 2019.

2.2. Types and Data Sources
The data used in this study consisted of primary and secondary data. Primary data was obtained directly from sources while secondary data was obtained from document searches and literature studies Data sources purposively who were considered able to provide the information needed, that is Head of the Natural Resources and Environment Section, Head of the Economy and Development Division and the Head of Balitbangda and also all documents of Balitbangda related to genetic resources.

2.3. Data Collection Technique
   1. Interview
      Interviews are conversations with specific intentions. The conversation was conducted by two parties namely the interviewer who asked questions and the interviewee to provide answers to that question (Moleong, 1996) [8]. Interview is the process of obtaining information by way of question and answer and face to face. The type of interview used in this study is structured interviews, where researchers have prepared research instruments in the form of written questions.
   2. Observation
      Observation is a deliberate observation, systemic, concerning social phenomena with psychological symptoms than do the recording (Soebagyo, 1997) [9]. Direct observation is carried out to reveal the role and efforts of Balitbangda to preserve genetic resources.
   3. Documentation
      According to Aan Komariah and Djam'an Satori (2011) [10] documentation, which is collecting documents and data needed in the research problems, it is examined intensely so that it can support and add to the trust and proof of an event. Document is a record of events that have passed which can be in the form of writing, pictures or monumental works from someone. Collecting documents and data needed in research problems is then explored intensely so that they can support and add to the trust and proof of a study. The documents used in this study are archives of the Decree of the Head of Research and Development Board relating to germplasm and genetic resources starting from 2003 to 2014 and books of SDG that have been issued by the Balitbangda since 2013-2017.

2.4. Data Analysis Methods
In qualitative research, the main instrument was humans so the data must be checked. The credibility of the data using Triangulation technique which capture data with various methods and the way to cross information obtained so that data obtained more complete and as expected. After the information obtained from all data sources is the same (saturated data) then the data called is more credible [11].

According to Sugiyono qualitative methods are research methods based on philosophy of positivism, it is used to examine the condition of natural objects (as opposed to experiment) where the researcher is as a key instrument, sampling data sources are purposive and snowball, data collection techniques with triangulation, data analysis is inductive/qualitative, and the results of qualitative research are more pressing meaning rather than generalization.

This study uses a qualitative descriptive research method. According to Sukmadinata [12], descriptive qualitative research is aimed to describe existing phenomena, both natural and human engineering, which pay more attention to the characteristics, quality and relevance of activities. In this study, researchers used a qualitative descriptive research method that explored the role of the Research and Development Board in the effort to preserve genetic resources in Jambi Province. Data or
information obtained from interviews will be checked with the results of observations and available documents then analyzed using qualitative descriptive methods.

3. Results And Discussion

3.1. Research and Regional Development Board of Jambi Province

The government has optimized the roles and functions of Research and Development more than a decade ago, beginning with the establishment of the Provincial Research and Development Board in 2001 and holding a National Research and Development Coordination Meeting, Research Communication Forum (FKK), Regional Development Research Communication Forum (FKKD) at the of each year. From the results of the meeting, many problems were encountered that the roles and functions of Research and Regional Development Board were not yet running optimally according to their formation. At present not all provinces in Indonesia have echelon II officials equivalent institutions (only 23 provinces). Several other provinces, research, and development activities are merged with Regional Development Planning Board (Bappeda) in a field (echelon III officials).

With the issuance of Undang-Undang No 23 in 2014 [13] concerning about Regional Government, it gives new hope and a strong legal basis for the regions to establish a Research and Development Board which is established to carry out the functions of supporting Government Affairs which are regional authorities including a) Planning, b) Finance, c) Staffing and education and training, d) Research and Development and e) Other functions in accordance with statutory provisions.

The Research and Development Board (Balitbangda) of Jambi Province was formed in 2001. Balitbangda is headed by echelon II officials. The existence of Balitbangda as a think tank in resolving the complex problems in Jambi Province by using a research approach such as research, study, and development. This confirms that all activities about research and development in Jambi province should be implemented with a "one-door model" mechanism in which Balitbangda is the institution that coordinates all the activities of the field. Balitbangda of Jambi Province has been awarded the Regional Research and Development Agency (BPPD) Type A for 4 years.

Balitbangda of Jambi Province has the duty of assisting the Governor to carry out the formulation and implementation of regional policies with a research and development approach. In implementing these basic duties, Balitbangda of Jambi Province has the following functions:

1. Formulating policies and implementing regional research and development
2. Providing support for the implementation of regional government in research and development.
3. Guiding and implementing duties in regional Research and Development.
4. Implementation of studies about regional development programs.
5. Implementation of other duties given by the Governor following its duties and functions

In simple terms based on its duties and functions, Balitbangda of Jambi Province is carrying out research, development, assessment, application, engineering, and operation. The existence of Balitbangda has a very strategic role in implementing government programs such as drafting, implementing and evaluating policies.

3.2. Identification of the Role of Balitbangda in Efforts to Preserve Genetic Resources

Based on the results of interviews with the Head of Balitbangda of Jambi Province and the Sub-Section of Natural resources and Environment, information was found that Balitbangda is not a technical institution that handles genetic resources, but Balitbangda was mandated since 2003 as chairman of the Regional Commission (Komda) of genetic resources in Jambi Province. Based on the results of interviews with competent officials, it was revealed that genetic resources in Jambi Province were very large and had high economic value, both from food crops, forests, horticulture, fish, and livestock. The high value of genetic resources is an opportunity for regions to obtain income from genetic resources. Ironically, many genetic resources have been revealed and explored and if they are not managed
properly, they will eventually become extinct. The use of natural resources can ideally be directed towards human welfare and accompanied by the preservation of diversity and its own uniqueness that can be carried out sustainably. The role of Balitbangda related to genetic resources conservation efforts can be seen in the following matters:

3.2.1. Research and Development Activities. One of the duties of Balitbangdais research and development where Balitbangda had carried out the study of potential and prospects of local specific genetic resources utilization in Jambi Province. Development is a science and technology activity that aims to utilize proven scientific theories to improve the existing functions, benefits, and applications of science and technology, or produce new technologies related to the local government [14]. In this case, the development activities carried out by Balitbangda were compiled of books of genetic resources. The purposes of compiling the books are one of the efforts to document the wealth of high-value genetic resources, socializing about genetic resources to the community and collecting typical genetic resources of Jambi Province which was previously published separately by each institution.

Balitbangda of Jambi Province continued to expand the scientific development activities that are practical and can be understood by all groups, written with interesting images so they were interested in reading the books. Balitbangda of Jambi Province used a particular theme for each issue. The books of genetic resources that have been published by Balitbangda of Jambi Province can be seen in table 1.

| No | Research and Development | Name of Activity | Year  |
|----|--------------------------|------------------|------|
| 1  | Research                 | Study of Potential and Prospects of the use of local specific of Genetic Resources in Jambi Province | 2009 |
| 2  | Development              | a. Compilation of the book Study of The Inventory of Potential Biodiversity and Germplasm in Jambi Province | 2003 |
|    |                          | b. Compilation of the book 50 Rare Flora and Fauna of High Economic Value in Jambi Province | 2012 |
|    |                          | c. Compilation of the book Food Crops and Horticulture of Genetic Resources in Jambi Province | 2013 |
|    |                          | d. Compilation of the book Fish and Animals of Genetic Resources in Jambi Province | 2014 |
|    |                          | e. Compilation of the book Genetic Resources of Plantation and Forest Plants | 2016 |
|    |                          | f. Compilation of the book Profile of Conservation of Genetic Resources in Jambi Province | 2019 |

(Sources: Primary Data, 2019)

Table 1 showed the activity of Balitbangda related to genetic resources through research and compilation of genetic resources books. Noted 1 research and 6 genetic resources books that have been issued by Balitbangda. The study and books compilation had through a series of activities from coordination with other agencies, preparation of teams, collected data and materials, field observations, writing, Focus Group Discussion, Printing the book/report to the seminar on socialization.

3.2.2. Institution. In the organizational structure, Balitbangda of Jambi Province has a sub-sector of Natural Resources and Environment is related to Genetic Resources. The sub-sector is under the Regional Infrastructure (2001-2016). With the change in structure, genetic resources are now under the Development Economics sector precisely in the sub-sector of Natural Resources and Environment (2017 to present).

Balitbangda was also actively involved in the Regional Commission of Genetic Resources in Jambi Province and was appointed as the daily executive chief which has the following tasks:
a. Submitting a suggestion to the director of the Regional Secretary of genetic resources regarding the implementation and preservation and utilization of the genetic resources
b. Providing input to the director of genetic resources Commander in the context of coordinating the formulation of SDG management and preservation
c. Conducting research and evaluation on the development of genetic resources conservation and utilization
d. Promoting the importance of genetic resources including its use.
e. Reporting the implementation of the activity to the director of the genetic resources Commander
f. Arranging the working procedures of the genetic resources Regional Commission.

3.2.3. Cooperation/Network. Balitbangda as chief executive of regional commission has coordinated and synchronized with competent institutions, for example, the Office of Horticulture and Animal Health of Jambi Province, The office of Plantation of Jambi Province, The office of Forestry, The office of Marine and Fisheries, Assessment and Agricultural Technology (BPTP), Natural Resource Conservation Center (BKSDA), 4 National Park Centers, Jambi University, Batanghari University, Pinang Sebatang Non-Governmental Organization (NGO), and Warung Conservation (NGO).

In Compilation of genetic resources books with certain themes in each issue, Balitbangda actively coordinated and consolidated with relevant institutions that are related to the book’s theme. The activities of Balitbangda of Jambi Province about cooperation and networking are as follows:

a. The establishment of the Jambi Province Regional Germplasm Commission with Governor Decision No. 327 of 2003 concerning the Establishment of the Jambi Province Germplasm Committee
b. Renewing the Decree of the Governor of Jambi in 2003 with the Amendment to the Governor of Jambi No. 445 of 2011 concerning Regional Commission of Germplasm
c. Correcting Governor Decree No. 445 of 2011 concerning Regional Commission of the genetic resources
d. Meeting/consolidation of members of the genetic resources commander under Governor's Decree Number 578 / Kep.Gub / Balitbangda / 2014.
e. Attending national meetings, both seminars and congresses or other activities are carried out by The National Genetic Resources Commission.
f. Meeting/consolidation of members of the genetic resources commander in 2019.

3.2.4. Socialization. After the preparation of the book was completed, Balitbangda of Jambi Province conducted socialization about genetic resources to teachers and education staff in districts/cities in Jambi Province starting in 2015 until 2019. For 2019 Balitbangda will lead socialization to the book of the profile of genetic resources conservation and socialization of the study “The readiness study of the Tangkit Baru village has been carried out to realize the Geographical Indications of Tangkit Baru Pineapple in Sungai Gelam District, Muaro Jambi Regency.

3.2.5. Supported and Accompanied the acceleration of registration of geographical indications of Nanas Tangkit Baru. Variety of Nanas Tangkit Baru in Muaro Jambi Regency is one of the pre-eminent genetic resources in Jambi Province which has a distinctive sweet taste and ability to adapt to peatlands. Currently, Balitbangda together with 6 other agencies supported the process of accelerating the registration of the geographical indication of Nanas Tangkit Baru which aims to increase the selling price and provide legal protection for the Nanas TangkitBaru so that it cannot be claimed by other regions. Legal protection is very necessary to preserve genetic resources from extinction.

Thus the rolesBalitbangda in an effort to preserve Genetic Resources in accordance with its duties and functions, are conducted research and development activities, active in Regional commission of Genetic Resources in Jambi Province, cooperated with competent institutions, conducted seminar, socialized to teachers/education staff in the regency/city about genetic resources, support the
acceleration of registration of geographical indications of Pineapple Tangkit Baru. However, those roles were not optimal yet, considering that there are still obstacles or limitations of the Balitbangda in efforts to preserve genetic resources in Jambi Province.

3.3 Balitbangda Obstacles in Preservation of Genetic Resources in Jambi Province

a. Low Budget
The low budget for book compilation activities led to the author's team limiting the number of Genetic resources to be inventoried, as a result, not all Genetic resources became book material. The budget adjusts the requirements of research personnel relating to the honorarium and printing costs of the books. SDG books were printed only 150-200 copies even though the demand for this book was very high from other institutions and was not in the budget the cost to send the books.

b. Lack of Researcher
Balitbangda has 12 researchers with different expertise, and genetic resources cover agriculture, forestry, livestock, and fisheries. Balitbangda of Jambi Province only has 2 agricultural researchers and no other fields. Therefore researchers in other fields such as economics, social and health are involved in the compilation of books due to limited resources of researchers. To overcome this problem, Balitbangda works with related stakeholders such as the Forestry Service, BKSDA, Horticulture Food Crops and Animal Health, Warsi, Fisheries and Marine Services and others.

c. Doesn’t have a Business Incubator
As a research and development institution, Balitbangda should be able to create an innovation, including in preserving genetic resources in Jambi Province. This is because the Balitbangda did not have a demonstration plot or business incubator so that the genetic resources has added value. The lack of a touch of innovation and technology also hinders the Balitbangda in efforts to preserve genetic resources.

d. Less Caring and understanding of Officials about Genetic Resources
Substitution of officials within Jambi Province Government, especially, Balitbangda, caused no continuity in conducting research or development regarding genetic resources. Because there is no official understanding and concern about the importance of genetic resources. For example, in 2016 and 2017 there were no studies and compilation of genetic resources books, even though there were still many genetic resources that still had to be explored and identified as potential. The low level of understanding and concern of the officials about the genetic resources will hamper the role of Balitbangda in its efforts to preserve the genetic resources.

e. Lack of Research/studies about Genetic Resources
The lack of research or studies on Genetic Resources came from the low budget in the natural resources and environmental sub-sector only for writing books that do not allow it to become a research activity that required a larger budget, limited expert researcher. Even though genetic resources has become a national and world issue, it needs to be supported by research and development.

4. Conclusion
1. The roles of the Balitbangda of Jambi Province in an effort to preserve Genetic Resources, that were conducted research and development activities, active in the Regional Commission of Genetic Resources in Jambi Province, cooperated with competent institutions, conducted research seminars, socialized about genetic resources to teachers/education staff in the District/city and supported the acceleration of registration of geographical indications of Pineapple Tangkit Baru.
2. Obstacles to Balitbangda to preserve Genetic Resources that were low budgets, lack of research resources, lack of business incubators, low understanding, and concern of officials about the genetic resources and a lack of research and studies about genetic resources.
5. Recommendation
Based on the conclusion of this study, several recommendations need to be taken by the Balitbangda in genetic resources conservation efforts:

1. Need to increase the budget in Research and Development about genetic resources
2. Encouraging genetic resources regulations in Jambi Province
3. Strengthening the cooperation of all institutions to give attention to the genetic resources in Jambi Province

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