

## The Model Of Legal Protection For Products Of Genetic Engineering In Agricultural Technology

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**Abstract:** *This research is aimed to find a new model of legal protection for the product of genetic engineering in the field of agricultural biotechnology. The concept of legal protection as coined by Philipus M. Hadjon is limited to administrative law in the relationship between the people and the government, not applicable to all fields of law. The legal protection for genetic engineering in the field of agricultural biotechnology is covered in laws and their derivative regulations as it evidently provides forum of compensation for the infringement of intellectual property resulted in genetic engineering in agricultural biotechnology. The contract becomes a special instrument of legal protection between owners of intellectual property in the field of agricultural biotechnology dealing with civil laws.*

**Keywords:** *Legal protection, genetic engineering, agricultural technology.*

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### I. INTRODUCTION

Biology as a science affirms humans as beings who are able to regulate everything, manage organisms around it, and even regulate their needs. One of the culminative forms in the use of biology in human life is the genetic engineering technology or so-called as biotechnology. The use of biotechnology is a right for all citizens to improve their life and welfare. In dealing with this, the 1945 Constitution of the Republic of Indonesia (*the 1945 Constitution*) in Article 28C paragraph (1) states:

"Everyone has the right to develop themselves through fulfilling their basic needs, the right to education and benefit from science and technology, cultural arts, in order to improve the welfare of mankind."

Article 28C Paragraph (1) of the 1945 Constitution is the main pillar for the development, application and utilization of biotechnology products in Indonesia. Regarding this, Article 28C paragraph (1) of the 1945 Constitution can be referred to as the highest legal norms made by the government in providing legal protection and guarantees for the development, application and utilization of biotechnology products in Indonesia.

Biotechnology which ultimately results in genetic engineering is not a new technology. Rather, it is a series of technologies that has developed and grow since thousands of years ago. It covers various traditional processes with products such as bread, wine, and cheese. Various oriental foods such as soy sauce and *tempe* (fermented soybean) and

recycling processes are resulted in biotechnology as it has been developed to use microorganisms since years ago.<sup>1</sup>

Biotechnology derives from the word "Bio" and "Technology" which can be interpreted as the use of living organisms or systems to solve a problem or to produce useful products. Biotechnology is a process of biological utilization to produce benefit products for humans. The common biological agents are microorganisms, such as bacteria and fungi, as their breeding are relatively fast and easily modified, so that they can quickly process raw materials.<sup>2</sup> In short, biotechnology is a method or tool (in the form of science) to produce genetic engineering by utilizing genetic resources to improve the degree of human well-being, by paying attention to the limits of positive use of technology.

Related to genetic engineering, the English literature calls it "*genetically modified organism*" or "*living modified organism*" which means living organisms that contains genetic materials as a result of biotechnology, as explained by Thomas J. Schoenbaum in Muhammad Syaifuddin, "*living organisms that contain novels combination or genetic material as a result of the application of biotechnology.*"<sup>3</sup> Hari Hartiko explains that genetic engineering is an attempt by genetic experts to remove a single gene from the cell of a living species and put it in the cells of other species.<sup>4</sup>

Furthermore, Muhammad Syaifuddin affirms that genetic engineering is a process of manipulating or changing the genetic makeup in chromosomes or changing the genetic expression system carried out by humans on cells or genes in certain organisms that live on plants, animals and humans, with the aim to produce new identical types of genetic organisms. An organism whose DNA is changed unnaturally by applying a particular equipment or procedure, so that the gene in question can be transferred from one organism to another organism that is still in one species, which has several advantages over its natural fellow organism because in the process its manufacture by means of genetic engineering is selected for its good qualities, which are expected to obtain certain benefits for the need of organism.<sup>5</sup>

*The International Service for Acquisition of Agri-Biotech Applications (ISAAA)* in its annual report released a detail report on the adoption of biotechnological crops under the heading "The 20<sup>th</sup> Anniversary of Biotechnological Crop Commercialization (1996-2015) Worldwide, with Emphasis on the Application of Biotechnological Crop Utilization in 2015." The report presents a data on biotechnological crop area globally from only 1.7 million hectares in 1996 to 179.7 million hectares in 2015. It shows an increasing number up to 100 times in the past 20 years has made biotechnology as a fast-agricultural technology. It reflects the the degree of farmers' satisfaction against the benefits using biotechnology plants.<sup>6</sup>

Indonesia has also developed the use of biotechnology in the field of agriculture to end up prosperity. Some activities carried out by research centers in agriculture can be seen in the table below:

<sup>1</sup> John E. Smith. *Biotechnology*. (Jakarta: EGC, 1995), at. 2-3

<sup>2</sup> See Laporan Akhir Pengkajian Hukum: *Pengkajian Hukum Tentang Ketentuan Pidana dalam Penerapan Bioteknologi Kesehatan*. (Jakarta: BPHN Kemenkum HAM, 2012), at 7-8.

<sup>3</sup> Muhammad Syaifuddin and Sri Handayani. *Hukum Perlindungan Rekayasa Genetika*. (Malang: Setara Press, 2017), at 12-13. (Hereinafter called *Muhammad Syaifuddin dan Sri Handayani I*).

<sup>4</sup> Hari Kartiko. *Bioteknologi dan Keselamatan Hayati*. (Jakarta: Komphalindo, 1995), at 6.

<sup>5</sup> Muhammad Syaifuddin dan Sri Handayani (I). *Op.Cit*, at 14.

<sup>6</sup> <http://www.isaaa.org/resources/publications/briefs/51/pressrelease/pdf/B51-PressRelease-Bahasa-Indonesia.pdf>, accessed in April 7<sup>th</sup>, 2017.

Table 1  
Research on Plant Engineering in Indonesia

Plants	Characteristics	Genes	Institutions
Corn	Pest Resistance	Proteinase inhibitors	Balitbiogen
Rice	Resistant to pests, diseases and drought	Bt, chitinase	Balitbiogen, LIPI
Peanuts	disease resistant	CoatCoat protein	Balitbiogen, IPB
Chocolate	pest resistant	Bt	Balitbiobun
Sugar Cane	- High yield of - Drought tolerant	Over expression SPS and PtP, Bet A	PTPN XI (formerly P3GI)
Potatoes	Resistant to fungal disease	Chitinase, hordothionine	IPB
Palm oil	Low content of saturated fatty acids	KAS II and SAD	BPPT
Papaya	<i>Delayed ripening</i>	ACC oxidase	Balitbiogen, LIPI
Citrus	Resistant CVPD	Indigenus gene	UNUD
Soybean	Pest resistant and high in nutrients	Proteinase inhibitors, overexpress indigenus gene	Balitbiogen, UNUD, UNIBRAW
Sweet potatoes	Pest resistant	Proteinase inhibitors	Balitbiogen

Source: biogen.litbang.go.id, accessed November 11, 2017

Research products related to the use of agricultural biotechnology requires a lot of time and money. Such research, however, needs to be carried out for years as it is seen as not a simple research. It takes chemical and physical processes in it to form a product that has an advantage and can be utilized by the community. On the other hand, it can bring an adverse impact as a side effect of the research.

To adhere in this view, law is aimed to provide protection. It includes the law of intellectual property rights which is aimed to protect agricultural biotechnology, particularly patents, as enacted in Law Number 13 Year 2016 on Patents (hereinafter referred to Patent Law). The Patent Law requires that a biotechnology product must be new which contains inventive steps and it can be applied in the industrial sector in order to be protected by a patent system under the Indonesian government. This patent system has the strongest economic aspects compared to other protection systems in the field of intellectual property.

The protection provided by the government as explained above will result in legal problem when protection through intellectual property rights law in agricultural biotechnology products does not specifically and clearly regulate agricultural biotechnology products. Therefore, the problem of the absence of laws and regulations that specifically regulate the legal protection of agricultural biotechnology in intellectual property in Indonesia is interesting to study further.

The study will be carried out by reviewing or evaluating how the laws and regulations on agricultural biotechnology are made and how they are enacted to achieve Indonesia's ultimate goals to provide justice and prosperity to people in the country.

According to the background, the discussion will cover "*How is the model of legal protection for genetic engineering in agricultural biotechnology?*"

## II. RESEARCH METHODS

### a. Type and Data

#### i. Primary Data

Primary data is the data which is directly obtained from the subjects studied, comprising in the form of words, attitudes and actions of inventors of agricultural biotechnology and related institutions in an effort to protect intellectual property rights of agricultural biotechnology.

#### ii. Secondary Data

Secondary data is the data obtained from written sources such as books, scientific magazines, official documents, personal documents and personal records relating to attitudes, actions of the government as an effort to protect intellectual property rights in the field of biotechnology agriculture.

### b. Data Collection

#### i. Primary Data Collection

Primary data are collected through interviews and observation. In general, the method of interview consists of five types, i.e.: directive interview, non-directive interview, focused interview, in-depth interview and repeated interview.<sup>7</sup> The five types of interviews are used together in this study, so that adequate data will be obtained. Interviews are conducted in depth by asking questions compiled in a list of questions that have been prepared as guidelines.

In order to complete the interview technique, the researchers observe the subject under the study. In addition, it uses participatory observation. However, there are a number of obstacles resulted in the researchers cannot fully involve in all activities of the subject under the study so that it complements research through non-participatory observation. In this non-participatory observation, the researchers observe the attitude and behavior of the subject under the study without any interaction.

### c. Secondary Data Collection

The secondary data are collected through read and study books, scientific magazines, official documents, personal documents and personal records of the subjects under the study. These sources are obtained from libraries, official archives and personal files of the subjects under study.

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<sup>7</sup> Ronny Hanitijo Soemitro. *Metodologi Penelitian Hukum dan Jurimetri*. (Jakarta: Ghalia Indonesia, 1994), at 35.

#### d. Data Analysis

The data are analyzed qualitatively to describe the legal protection for the products of genetic engineering in agricultural biotechnology in Indonesia by taking the area of Besuki Residency as a research location. The output of this research is new information in the form of the model of legal protection in intellectual property rights of agricultural biotechnology in the area of the former Besuki Residency. It is expected to be able to provide recommendations in the form of appropriate implementation and outlined in the form of regulation related to the research title.

### III. RESULT AND DISCUSSION

#### a. Regulation on the Protection of Products in Genetic Engineering of Agricultural Technology

##### i. Genetic Engineering as Intellectual Property Right

Intellectual Property Right (IPR) is an economic right granted by law to a creator or an inventor of a work of intellectual ability. It affirms that IPR is a thought creation in the form of invention, literature, art, symbol, name, picture, and design used in trade.<sup>8</sup> IPR is a type of movable and intangible object which can be transferred to other parties either in the form of inheritance, grant, will, endowment, agreement or other reasons justified by laws and regulations.

Intangible intellectual property rights are assets with certain values owned by their holders. As having economic values, they can be used as collateral for certain agreements such as debt agreement. IPRs are also a business object having advantages in the field of world trade.

Sentosa Sembiring reveals that IPRs are basically resulted in the existence of a creation in the arts or in the field of industry or in science or a combination of them.<sup>9</sup> OK. Saidin adds emphasize that IPRs are material rights, the right to something that originates from the brain, the work of the reasoning human ratio.<sup>10</sup>

IPRs as kind of privilege rights have special protection by law made by the government, but those should follow certain procedures and conditions. The registration of IPRs is very important so that every creator, inventor and economic actor can take possession or obtain legal certainty and protection. The protection of IPRs is not solely to protect people as individuals but human rights dealing with human interactions.<sup>11</sup>

##### ii. Scope of Intellectual Property Rights

IPRs are not new term in Indonesia. In the Dutch colonial period, IPRs was applied based on the principle of concordance.<sup>12</sup> There were only three intellectual property rights recognized by the colonial government i.e.: copyright, trade and industrial rights, and patents. However, the scope of IPRs has developed. The reforms in IPRs are also influenced mainly

<sup>8</sup> Khoirul Hidayah. *Hukum HKI Hak Kekayaan Intelektual*. (Malang: Setara Press, 2017), at 1.

<sup>9</sup> Sentosa Sembiring. *Prosedur dan Tata Cara Perolehan Hak Kekayaan Intelektual di Bidang Hak Cipta, Paten dan Merek*. (Bandung: CV. Yrama Widya, 2002), at 14.

<sup>10</sup> OK.Saidin. *Aspek Hukum Kekayaan Intelektual (Intellectual Property Rights)*. (Jakarta: PT RajaGrafindo Persada, 2003), at 9.

<sup>11</sup> Neni Sri Imaniyati dan Panji Adam Agus Putra. *Hukum Bisnis Dilengkapi dengan Kajian Hukum Bisnis Syariah* (Bandung: PT Refika Aditama, 2017), at 155.

<sup>12</sup> Adrian Sutedi. *Hak Atas Kekayaan Intelektual*. (Jakarta: Sinar Grafika, 2013), at 1.

by Indonesia's international obligations related to the convention in World Trade Organization (WTO). Such convention requires all member states to adjust their national legislation to the provisions in the convention especially dealing with the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs Agreement).<sup>13</sup>

The Director General of Intellectual Property Rights classifies IPRs into two categories which can be mentioned as follows:

1. Copyright
2. Industrial Property Rights. Industrial property comprises:
  - a. Patents;
  - b. Brand;
  - c. Industrial design;
  - d. Integrated circuit layout design;
  - e. Trade secrets;
  - f. Plant varieties.

### iii. Intellectual Property Rights Law in Indonesia

The system in Intellectual Property Rights is a private right. A person has a right to submit application or register his/her intellectual work. The exclusive rights granted by the government to individual IPR actors (inventors, creators, designers and so forth) are aimed as a recognition to the work (creation) so that other people are stimulated to be able to further develop it.<sup>14</sup> It asserts that IPRs rely upon market mechanisms. In addition, the IPRs system supports the establishment of a good documentation system for all forms of human creation so that the similar or like product resulted in technology or other works can be avoided or prevented.

The existence of IPRs in relations between humans and between countries is inevitable. IPRs can be claimed as given and inherent in and toward an industrial society. It always follows the dynamics of the development of society itself. Likewise, it is the case for Indonesian people who are inevitably in contact with and directly involved in IPRs. In general, IPRs can be divided into two categories, namely: Copyright set forth in Law Number 28 of 2014 and Industrial Property Rights which include Patents regulated in Law Number 13 of 2016 on Patents, Law Number 20 of the Year 2016 on Trademarks and Geographical Indications, Industrial Designs regulated in Law Number 31 of 2000, Integrated Circuit Layout Designs as stipulated in Law number 32 of 2000, Trade Secrets regulated in Law Number 30 of 2000, and Plant Varieties regulated in Law Number 29 of 2000 concerning Plant Variety Protection.

The establishment of integrated IPRs information system is expected to increase the level of application for IPRs registration in Indonesia. Regarding integrated law enforcement (which includes IPRs), infringements in the form of piracy of intellectual works protected by law will diminish. The synergy of both, the information system on IPRs and integral law

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<sup>13</sup> *Ibid.*, at 27.

<sup>14</sup> Sudargo Gautama. *Segi-segi Hukum Hak Milik Intelektual, Edisi Revisi*. (Bandung: Eresco, 1995), at 10.

enforcement, will ultimately bring Indonesian people to a more civilized life, who respect for the work of others.<sup>15</sup>

#### **b. Regulation of Patent Protection on Products of Genetic Engineering in Agricultural Technology in Indonesia**

Currently, biotechnology develops rapidly, especially in developed countries. This development is marked by the discovery of various technologies such as genetic engineering, tissue culture, recombinant DNA, stem cell breeding, cloning, and others. This technology allows us to recover from genetic and chronic diseases which are difficult to cure, such as cancer and AIDS. Research in the field of stem cell development also allows stroke patients or patients with other diseases resulted in loss or damage to body cell to be recovered. In food, by using genetic engineering, tissue culture and recombinant DNA technology, plants can be produced with superior qualities because they contain more nutrients compared to ordinary plants. In addition, they are also more resistant to pests and environmental stresses. The current application of biotechnology also can be found in environmental conservation from pollution. For example, in the decomposition of petroleum which is spilled into the sea by bacteria and the decomposition of substances like toxic or poison in rivers or seas by using new types of bacteria.<sup>16</sup>

Today, the development of biotechnology is not only based on biology, but also on other applied and pure sciences, such as biochemistry, computers, molecular biology, microbiology, genetics, chemistry, mathematics, and so on. In this regard, biotechnology can be justified as applied science that combines various branches of science in the production process of goods and services.<sup>17</sup> Related to this, AJ Nair states:

*"Even though biotechnology has been in practice for thousands of years, the technological explosion of the twentieth century, in the branches of sciences physics, chemistry, engineering, computer applications, and information technology evolutionary the development of life sciences, which ultimately results in the evolution of modern biotechnology. Supported by an array of biochemical, biophysical, and molecular techniques besides engineering and information technology, life scientists were able to develop new drugs, diagnostics, vaccines, food products, cosmetics, and industrially useful chemicals. Genetically-altered crop plants, which can resist the stress of pests, diseases, and environmental extremes were developed. New tools and techniques to extend the studies on genomics and proteomics, not only for man but other organisms were also developed. The involvement of information technology and the internet in biotechnology, particularly genomics and proteomics, has been given a new branch in biotechnology the science of bioinformatics and computational biology. The skills of biotechnology, like any other modern science, are founded on the previous knowledge acquired through the ages."<sup>18</sup>*

In dealing with the object of a patent, it is inseparable from the discussion on property. As it is associated with a patent, the property of the patent is kind of an intangible object

<sup>15</sup> Adisumarto Harsono dalam Soedjono Dirdjosisworo. *Hukum Perusahaan Mengenai Hak Atas Kekayaan Intelektual (Hak Cipta, Hak Paten, Hak Merek)*. (Bandung: Penerbit Mandar Maju, 2000), at 15.

<sup>16</sup> *Ibid.* at 84-85.

<sup>17</sup> *Ibid.*

<sup>18</sup> Nair and Nair. *Introduction to Biotechnology and Genetic Engineering*, at 4–5.

which is classified as part of industrial property rights. Patent rights have objects against findings (*unitvinding*) or also called inventions which can practically be used in industrial fields. The definition of industry in this sense includes the results of technological developments in agriculture, animal husbandry technology and even educational technology. The results of genetic engineering of agricultural biotechnology are protected by patents. The scope of patent rights is very broad, it is in line with the breadth of the human mind. Whatever creations born from human thinking can be applied in industrial fields including their development. Therefore, it makes sense that the object of this patent will develop in line with the development of science and technology as the results of human thinking. Based on Law No. 13 of 2016 on Patent:

"A patent is an exclusive right granted by the State to an Inventor for his invention in the field of technology, which for a given period to itself Invention or give consent to others to carry it out."<sup>19</sup>

The discovery is certain problem-solving activities using technology, including processes and results or the development and advancement of the processes or results. Basically, technology is science applied in industrial processes. Findings that meet the requirements of novelty, containing inventive steps and can be applied in industry can be granted a patent as Article 3 paragraph (1) of Law No. 13 of 2016. It states that patents are granted for new inventions which have never been owned or created by others, containing inventive steps and can be applied in industry.

i. Novelty Requirements

An invention is deemed to meet the novelty requirements if at the time of submission of a Patent request the invention is not the same or does not form part of the prior invention. It means that the patent examiner must use existing findings as a comparison. According to Article 5 paragraph (1) Law No. 14 of 2001, an invention is deemed new if on the date of receipt, the invention is not the same as the technology disclosed previously.

ii. Inventive Step Requirements

An invention contains an inventive step if the discovery for someone who has ordinary skills is unpredictable. An assessment that an invention is an unpredictable thing must be executed by considering the current expertise at the time the patent application was filed or it has been already available when the first request was submitted in the event that the request was filed with priority rights.

iii. Applicable in Industry

An invention can be applied in industry if the invention can be produced or it can be used in various types of industries in the case of discoveries regarding the process. An invention must be applicable for practical purposes in which it must be carried out in practice. If the invention is intended as a product or part of a product, the product must be able to be made, as in the provisions of Article 8 of Law No. 13 of 2016 as follows:

"An invention can be applied in industry if the invention can be carried out in the industry as described in the application."

<sup>19</sup> See Article 1 paragraph (1) Law Number 12 of 2016 on Patent.



### c. Model of Legal Protection for Products of Genetic Engineering in Agricultural Biotechnology

The term '*perlindungan*' (English: protection) according to Indonesian Official Dictionary is '*tempat berlindung* (a refuge), '*hal (perbuatan dan sebagainya) melindungi*' (English: matter (actions and so forth) to protect).<sup>20</sup> It is defined as a process or action to protect. On the other hand, Black's Law Dictionary defines 'protection' as the act of protecting. In general, 'protection' means protecting things from dangerous things, something that can be in the form of interests, things or goods. Protection also contains the meaning of protection given by someone to other weaker persons.<sup>21</sup>

With regard to the legal definition, Soeroro defines that law is a set of rules made by authorities with the aim to regulate social life characterized to govern and prohibit and having coercive nature by imposing penalties for violating them.<sup>22</sup> In line with Soeroro's definition, JCT Simorangkir and Woerjono Sastropranoto define law as a set of coercive rules to govern human behavior in the community made by authorities.<sup>23</sup> The purpose of the law, according to Sudikno Mertokusumo, is at achieving order in society so that it is expected that human interest will be protected as a means to achieve its objectives, including to share rights and duties between individuals in society, sharing authorities and prioritizing legal problems and maintaining legal certainty.<sup>24</sup>

In line with Sudikno's opinion, Fitzgerald explains Salmond's theories of legal protection in Dyah Ochterina Susanti which describes that law is aimed to integrate and coordinate various interests in society, by limiting these various interests, because in a certain interest, the protection against certain interests can only be exercised by limiting interests of others.<sup>25</sup> Accordingly, law protects person's interests by means of allocating a power to him in a measurable manner, in the sense that his breadth and depth are determined, to act in the framework of his interests, referred to as rights. It shows that not every power in society can be called as a right, but only a certain power, which is given by law to persons.<sup>26</sup>

The existence of law in society is a suggestion to create peace and order in the community, so that in the interests of one community member to another, its interests can be maintained.<sup>27</sup> According to Paton, interest is the target of rights, not only because he is protected by law, but also because there is a recognition of these interests. Rights do not only contain elements of protection and interests, but also contain elements of will.<sup>28</sup> This affirms that not only the interests of the person are protected by law, but also the will of the person.

Based on the elucidation above, the definition of legal protection is an action or an effort to protect the community from arbitrary measures by authorities against the rule of law,

<sup>20</sup> Editorial team Indonesian Official Dictionary. *Kamus Bahasa Indonesia*. (Jakarta: Pusat Bahasa Departemen Pendidikan Nasional Jakarta, 2008), at 864.

<sup>21</sup> <http://erepo.unud.ac.id/9833/3/0be0ef7d5a3081532e17e5236d8ff561.pdf>, accessed in November 25<sup>th</sup>, 2017.

<sup>22</sup> <http://repository.uin-suska.ac.id/7119/3/BAB%20II.pdf>, hlm. 14, accessed in November 25<sup>th</sup>, 2017.

<sup>23</sup> *Ibid.*

<sup>24</sup> <http://erepo.unud.ac.id/9833/3/0be0ef7d5a3081532e17e5236d8ff561.pdf>, accessed in November 25<sup>th</sup>, 2017.

<sup>25</sup> Dyah Ochterina Susanti. *Bahan Ajar Mata kuliah Teori Hukum*. Presented in Postgraduate Program in Law at Universitas Islam Kediri (UNISKA). Kediri, 3 December 2011, at 1.

<sup>26</sup> *Ibid.*

<sup>27</sup> <http://erepo.unud.ac.id/9833/3/0be0ef7d5a3081532e17e5236d8ff561.pdf>, accessed in November 25<sup>th</sup>, 2017.

<sup>28</sup> *Ibid.*

to realize order and peace so that it enables humans to enjoy their dignity as human beings.<sup>29</sup> Legal protection can also be defined as protection by using legal means or protection provided by law, aimed at protecting certain interests, by making the interests to be protected in a legal right.<sup>30</sup> In connection with the theory of legal protection, there are several experts who explain in this regard, including Setiono, and Phillipus M. Hadjon.

According to Setiono, legal protection is an action or an effort to protect the community from arbitrary acts by authorities against the rule of law, to realize order and peace so that it enables humans to enjoy their dignity as human beings.<sup>31</sup> Legal Protection Theory is also developed by Philipus M. Hadjon in which legal protection is a subjective condition which states the existence of necessity in a number of legal subjects to immediately obtain a number of resources, in order to continue the existence of legal subjects guaranteed and protected by law. As a result, it is aimed its power organized in political and economic decision-making processes, especially in the distribution of resources, both in individual and structural ranks.<sup>32</sup>

With regard to legal protection for the results of genetics in biotechnology, it is essential to note that this protection can be done through IPRs. The conception of IPRs is based upon the idea that intellectual works requires human's sacrifice such as energy, time and cost. The existence of these sacrifices makes intellectual works have economic value granted to owners. Based on the concept, it encourages the need for an appreciation of the work that has been produced in the form of legal protection for IPRs. The purpose of providing this protection is to encourage the growth of the spirit of work and creation.<sup>33</sup>

Another definition of IPRs is the material right, the right to an object originating from the work of reason and mind with the ability to reason which is so-called as 'immaterial (intangible) intellectual', but it has economic value and can be valued with money, because it brings benefits to society.<sup>34</sup> Reasoning itself is a mind activity as a way to reach knowledge, from one knowledge to another, through the mediation of liaison knowledge.<sup>35</sup> Muhammad Syaifuddin argues that no everyone is able to reason optimally, even though everyone has own reason and mind. It shows that not all people who have reason and mind are able to produce IPRs, because only people who are capable of reasoning can produce IPRs.

<sup>29</sup> Setiono. Dissertation: *Rule of Law (Supremasi Hukum)*. (Surakarta: Magister Ilmu Hukum Program Pascasarjana Universitas Sebelas Maret, 2004), at 3.

<sup>30</sup> Harjono. *Konstitusi sebagai Rumah Bangsa*. (Jakarta: Sekretariat Jenderal dan Kepaniteraan Mahkamah Konstitusi, 2008), at 357.

<sup>31</sup> Setiono. *Loc. Cit.*

<sup>32</sup> Dyah Octorina Susanti. *Op. Cit.*, at 3.

<sup>33</sup> Mila Hanifa. Thesis: *Perlindungan Hukum Terhadap Akses dan Pembagian Keuntungan Atas Pemanfaatan Sumber Daya Genetik*. (Jakarta: Fakultas Hukum UNEJ, 2012), at 45.

<sup>34</sup> See Muhammad Syaifuddin dan Sri Handayani (I).. *Op. Cit.*, at 82. Basically, IPRs are the results of creation of works using human intellectuals. It resulted in humans as productive individuals having acquisition from natural rights. See Mila Hanifa. *Op. Cit.*, at 83.

Related to property rights, such property rights can be defined as the products or results of creativity from human minds expressed into forms whether material or immaterial. It is not as an embodiment what it is protected but their own creations. Such creations can be arts, industries, science or the combination of them. See Noor Mout-Bowmann. *Perlindungan Hak Cipta Intelektual : Suatu Rintangan atau Dukungan terhadap Perkembangan Industri*. Disampaikan pada Seminar Hak Milik Intelektual, Kerjasama FH USU dengan Naute van Haersolte Amsterdam, Medan, Januari 10<sup>th</sup>, 1989.

<sup>35</sup> Muhammad Syaifuddin and Sri Handayani (I). *Op. Cit.*, at 82.

Intellectual works produced by humans also require sacrifice of energy, time and cost. The sacrifice then makes intellectual works have economic value.<sup>36</sup>

Accordingly, it makes sense that the results of reasoning that use reason and thought lead to exclusive IPRs. The realization of the exclusive nature of IPRs is realized by granting a monopoly right for a certain period of time to IPRs holders to exploit IPRs to obtain economic benefits from the IPR.<sup>37</sup> In connection with this, there is a need for the protection of IPRs that provide benefits, including monetary benefits for inventors, creators or designers as a form of appreciation for their work. The protection is given with the aim to advance the development of advances in science, art and literature as well as other technological discoveries. It is also granted as awards which can encourage and motivate other people to produce more innovative works or findings.

Robert M. Sherwood in Muhammad Syaifuddin and Sri Handayani suggests five theories that underlie the need for a form and mechanism of legal protection against genetic engineering as a result of human intellectual works, *inter alia*:<sup>38</sup>

1. *Reward Theory* which has the meaning of a recognition of intellectual works produced by persons. As a result, such persons are called as inventors, creators or designers who are granted awards from their creative efforts in finding or creating intellectual works. In pertaining to this, Mieke Komar and Ahmad M. Ramli explains that as a right derived from human intellectual ability, IPRs need adequate legal protection as the reward for the efforts of inventors, creators or designers of intellectual works.<sup>39</sup> These rewards which are granted to inventors are:<sup>40</sup>
  - a. the inclusion of the word "exclusive rights" in the definition of Patents, Trademarks and Industrial Designs; and
  - b. granted a period of time according to the Agreement on *Trade Related Intellectual Property Rights* (TRIPs) in Patents (20 years), Trademarks (10 years can be extended) and Industrial Designs (10 years).
2. *Recovery Theory* which states that inventors, creators and designers who spent time, costs and energy in producing intellectual works should obtain they had done. These expenditures are a concrete form of sacrifice that have been given by a person or legal entity in producing intellectual works having benefits to the community. Based on this argument, the government must establish intellectual property law based on the principle of justice by returning overall expenditure as a form of reparation to sacrifice in the form of thought, energy, time, cost, even feeling. In this regard, recovery can be obtained in the form of stipulation of several rules related to IPRs, two of which are Law No. 29 of 2000 concerning Protection of Plant Varieties (*hereinafter referred to as PVP Law*) and Law

<sup>36</sup> Mila Hanifa. *Op. Cit.*, at 45.

<sup>37</sup> Muhammad Syaifuddin and Sri Handayani (I) ... *Op. Cit.*, at 83.

<sup>38</sup> *Ibid.*, at 145-150.

<sup>39</sup> Mieke Komar and Ahmad M. Ramli. *Paper: Protection of Current Intellectual Property Rights and Challenges in Facing the 21st Century Globalization Era*. Presented at the Seminar on Developing a Culture of Appreciating Intellectual Property Rights in Indonesia Facing the 21st Century Globalization Era, Bandung Institute of Technology Research Institute-Directorate General of Copyright, Patents, and Brands, Indonesian Ministry of Justice, Sasana Budaya Ganesa, November 28<sup>th</sup>, 1998, at 2.

<sup>40</sup> [http://www.bphn.go.id/data/documents/naskah akademik ruu Tentang hak kekayaan industri.pdf](http://www.bphn.go.id/data/documents/naskah_akademik_ruu_Tentang_hak_kekayaan_industri.pdf), on January 03 2018.

Number 13 of 2016 concerning Patents (*hereinafter referred to as Patent Law*). These laws cover rules if persons use a Patent, Trademark or Industrial Design belonging to another person, they will be subject to sanctions and this can be taken through civil or criminal legal enforcements or arbitration in its settlement.<sup>41</sup>

3. *Incentive Theory* is a theory that explains the relationship between creativity development and providing incentives for inventors, creators or designers. It affirms that incentives need to be given to strive for useful research activities. In other words, the state and/or other parties (other than the state) provide incentives with the aim that persons or legal entities are motivated to produce creative and innovative intellectual works. Regarding the concrete form of the application of *Incentive Theory*, it provides royalty as the right of inventors, owners or designers.<sup>42</sup> The award of royalties is expected to encourage inventors, creators or designers to develop and create new and better innovations and they will be more useful for the community.
4. *Risk Theory* is a theory stating that a work contains risks. Such risks are, for instances, the use of IPRs without any permission or approval from registered owners or holders of IPRs. Even though IPRs are immaterial, they contain economic value and can be justified as IPRs. They will bring about serious risks that it is possible other persons claim such immaterial property as their own and method or improve it. Thus, they need protection legally against these risks. In connection with the aforementioned statements, a concrete example of the application of *Risk Theory* is the inclusion of acts prohibited by law relating to IPRs, as if it is not, it will potentially harm inventors, owners or designers of intellectual works. One of them can be found in Article 19 of the Patent Law, in which this article contains the prohibition of other parties to use exclusive rights without the approval of patent holders. On the other hand, it covers Articles 142-152 of the Patent Law which establish the settlement of disputes as stated in Article 19 of the Patent Law. Regarding the criminal provisions, it is regulated in Article 161-166 of the Patent Law.

The protection provided as an award in the form of exclusive rights to inventors, creators or designer creates the ownership of IPRs.<sup>43</sup> The protection of IPRs is not only regulated nationally, but also internationally.

#### **d. The Future Concepts of Legal Protection for Products of Genetic Engineering in Agricultural Biotechnology**

##### **i. Regulations on Intellectual Property for Products of Agricultural Biotechnological Engineering**

The regulation on IPRs for products of agricultural biotechnological engineering is the first step for the legal protection. In this step, legal protection is exercised by legislative bodies. Norms in laws are intended to bring a better guarantee to individual rights on intellectual works in agricultural biotechnology. Laws will ease everyone to know certain objects (including IPRs) to be protected by law. Laws is aimed to prevent everyone with no any right commits to bring harm to rights holder. This is based on two considerations. First, everyone knows that he or she cannot carry out an act that will bring disadvantage to the rights of others because these rights are protected by law. By doing an action, it means a

<sup>41</sup> *Ibid.*

<sup>42</sup> *Ibid.*

<sup>43</sup> Mila Hanifa, *Op. Cit.*, at 83.

violation against the law. Second, there is a number of sanctions if the violation remains to be committed against the law.

## **ii. Implementation of Intellectual Property for Products of Agricultural Biotechnological Engineering**

The legal protection in the form of regulating IPRs on products of agricultural biotechnological engineering can be defined if it is followed up with a concrete application. Laws without action is no more than a string of meaningless words. At this stage, executive organ is entitled rights to provide legal protection.

The implementation of the rights stipulated in the law includes two things. *First*, the protection in the law is still general, so there must be follow-up for more specific protection. At this stage, it has been determined in a decision that the right to certain patents, for example, is the property of A. One must know that the patent belongs to A so that A has the right to his findings, it includes to prevent others from using it except with the approval of A.

*Second*, the prevention of violations of rights has been regulated in the law as well as countermeasures if violations actually occur. Prevention is an action in order to avoid disputes and losses. Preventive measures, for example, do not issue decisions on the registered intellectual property unless it is proven that owners use illegitimate evidence to obtain recognition of intellectual properties. In the meantime, the step of countering violations, for example, is the act of stopping the actions of persons in which they are without right to use intellectual property owned by other persons. The most often enforcement is an examination by officers of industries on works fabricating trademarks belonging to others.

The implementation of legal protection by the government depends upon the following aspects:

1. The adequacy and clarity of provisions on rights which should be protected;
2. The knowledge of personnel who must carry out rights as regulated in laws;
3. The availability of adequate facilities and infrastructure.

## **iii. Legal Means of Compensation against Infringement of Inventors' IPRs in Agricultural Biotechnology**

The prevention of against infringements of rights is the most important part in law enforcement. However, no matter how good a preventive measure is, it is always open to the possibility of a violation resulted in a loss. Losses can be seen as the condition that potentially ends up so that it needs a forum to solve it. The first forum for the settlement of losses is a forum formed by the parties that think their rights are harmed by others. In this forum, the parties can directly resolve their own disputes or ask third parties outside the parties to assist.

The loss settlement which is directly resolved by the parties is called as negotiation. In practice, the parties can be represented by their attorneys as they have qualities to understand the case. For example, attorneys from IPRs consultant will be more appropriate for the settlement of compensation related to intellectual property. The results of this forum are agreements between parties as outlined in a legally binding agreement. The parties must fulfill what they have agreed.

Forums which are formed by the parties by involving third parties can be in the form of mediation or arbitration. In mediation, the parties are mediated by mediators who help to resolve the dispute. Help means at providing win-win solutions for the parties, but the mediator does not decide the dispute. The parties themselves have the right to decide the

dispute. In contrast to mediation, in arbitration, third party which is called as an arbitrator has the right to decide a dispute. The arbitration award binds the disputing parties.

The second forum for settlement of compensation is not formed by the parties but provided by the state. The forum is a court. Courts have the power to resolve violations of rights set out in the law. Parties whose rights are harmed bring their case to courts with the aim to get a decision issued by courts containing an order to the parties suspected to be the cause of the loss to pay compensation.

The parties have the freedom to choose which forum to use for the settlement of the dispute, except laws state a procedure for a certain forum for the settlement. The parties also do not have the freedom to choose when the law stipulates, for instance, their cases can only be resolved in a court forum.

#### iv. Contracts

Contracts are the highest law in a civil relationship. Contracts are the main tool for protecting the interests of parties who have agreed on a contractual relationship. A contract is a law that contains what must be done or not by parties bound in it. The contract becomes a tool to guarantee that the interests of creators are fulfilled and do not harm each other. Thus, in a private relationship, the main legal protection is carried out by the parties using contract.

Legal protection by the state in a private relationship only works if the contents of the contract are violated by one of the parties. The aggrieved party filed a lawsuit with the court whose main purpose is to recover the loss by the party who are claimed to cause the loss. Therefore, if the entire contract has been fulfilled by the parties, the contract function as a legal protection tool has ended. In this case, legal protection by the state is not needed at all..

## IV. CONCLUSION AND SUGGESTION

### a. Conclusions

1. The regulation of legal protection for the products of genetic engineering in biotechnology, both directly and indirectly, is regulated in several laws and regulations, including:
  - a. Law No. 17 of 1985 on the Ratification of the 1982 Law of the Sea Convention;
  - b. Law No. 12 of 1992 on Plant Cultivation Systems;
  - c. Law No. 5 of 1994 on the Ratification of the United Nations Convention on Biological Diversity;
  - d. Law Number 29 of 2000 on Plant Variety Protection;
  - e. Law No. 32 of 2009 on Environmental Protection and Management;
  - f. Law 18 of 2012 on Food;
  - g. Law No. 13 of 2016 on Patent;
2. The appropriate legal protection for inventors of agricultural biotechnology as an effort to protect agricultural biotechnology findings is divided into two instruments, *inter alia*:
  - a. The protection related to Plant Varieties as stipulated in Law Number 29 of 2000 on Protection of Plant Variety; and
  - b. The protection related to Patents regulated in Law Number 13 of 2016 concerning Patent.

In dealing with this, inventions on products of agricultural biotechnology are included in the scope of plants, in which they use nonbiological or microbiological processes to produce genetically modified plants. Regarding this, patent protection against products of genetics agricultural biotechnology is given to the process which is known as the process of making agricultural biotechnology.

3. The future concept of legal protection for products of genetic engineering in agricultural biotechnology includes the following steps and instruments:
  - a. Regulating intellectual property on products of agricultural biotechnology engineering into legal instruments.
  - b. Implementing intellectual property on products of agricultural biotechnological engineering as regulated in the laws which includes (1) determining owners of intellectual property on products of biotechnological engineering; and (2) preventing violations of rights as regulated in the laws and their countermeasures on prevailing violations.
  - c. Providing legal means of compensation for infringements on products of intellectual property in biotechnological engineering.
  - d. Contracts as instruments for individuals to allow their IPRs in agricultural biotechnology are used by others.

#### **b. Suggestion**

1. To the House of Representatives of the Republic of Indonesia, it is recommended to amend the Patent Law which include: (1) special arrangements for patents on products of genetic engineering in biotechnology; and (2) changing the function of the state from the creator of patents to the function of recognizing and protecting patents.
2. To the House of Representative of the Republic of Indonesia and the Judiciary Institution, it must be understood that the regulation in laws is only the first step in the legal protection of intellectual property on products of biotechnological engineering. The House of Representatives and the judiciary with their supervisory function must ensure legal enforcements on their violators.
3. To inventors and holders of IPRs on products of biotechnological engineering in making contracts for the utilization of IPRs must consider to the provisions of the law so that their contracts they have made will be legally binding.

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