

# **SUSTAINABLE FARMING SYSTEM REVIEWED FROM PERSPECTIVE OF KI HADJAR DEWANTARA'S NOBLE TEACHING AND TAMANSISWA PHILOSOPHY VALUES**

**Ignatius Suprih Sudrajat**

Department of Agribusiness, Agriculture Faculty, University of Sarjanawiyata Tamansiswa, Jl. Batikan No.6 Tahunan, Umbulharjo, Phone Number: +62-274-384924, Post Code: 55167, Yogyakarta, Indonesia.

E-mail: [suprihsudrajat@yahoo.com](mailto:suprihsudrajat@yahoo.com)

## **Abstract**

Sustainable farming system is an environmentally friendly agricultural that takes into account ecological, economic and social aspects. In general, the philosophy of this system is closely related to the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophy values about human harmony with its environment. The aim of this study was to look at sustainable agriculture from the perspective of the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophy values. This study is a library research with descriptive-qualitative methods. The research used is a scientific, normative, historical and biographical approach. The data obtained is processed with the content analysis technique, which is analyzing the data according to its phenomenal-philosophical content. The result is a correlation about the objectives and basic principles of sustainable farming systems; farmers-based sustainable farming system; local wisdom in sustainable agriculture; food security and independence; and elements of education and teaching in sustainable agriculture.

**Key words:** ecology, economic, human, social, sustainable agriculture, Tamansiswa, Indonesia

## **INTRODUCTION**

The issue of environmental problems has become a global problem and apprehensive topic since 1970s to the present. Exploitation of natural resources and excessive environmental degradation has an impact on environmental health. Concern about environmental health raises an approach known as the sustainable development approach (Sudrajat *et al.*, 2018). The principle of sustainable development in the Stockholm Declaration contains human responsibility to protect the environment and natural resources for the benefit of present and future generations (Sohn, 1973).

The use of production input facilities in modern agriculture to spur production such as fertilizers and chemical pesticides has a significant impact on reducing the quality of the environment in the agricultural sector. Modern agriculture rolled out as a green revolution program is closely related to these environmental issues (Sudrajat *et al.*, 2017). Green revolution was initially able to bring Indonesia to self-sufficiency in 1984. After 1984, the green revolution

did not make rice production rise significantly, even the green revolution had a negative impact especially on soil fertility and the ability of the soil to produce food substances with sufficient quality and quantity (Manning, 1988).

The term of sustainable agriculture was originally used around the 1980s by FAO (Food Agriculture Organization) experts. Conway (1984) uses the term of sustainable agriculture in the context of an agro-ecosystem that seeks to combine productivity, stability, and equity. There are several equivalent meanings that describe sustainable farming systems, such as regenerative agriculture, biodynamic agriculture, conservation farming systems, organic farming, bio-ecology agriculture, environmental farming systems, holistic agriculture, resource efficient agriculture, natural agriculture, etc. (Parr *et al.*, 1990).

In Indonesia, sustainable agriculture that has an insight into the environment is an implementation of the concept of sustainable development which aims to increase the income and welfare of farmers in a broad manner, including increasing agricultural productivity without leaving attention to the preservation of natural resources and the environment. Sustainable agricultural development must be carried out in a balanced manner and adapted to the carrying capacity of the ecosystem, so that the sustainability of production can be maintained while emphasizing the importance of conservation of natural resources (Rivai & Anugrah, 2003).

Philosophically sustainable agriculture contains a moral message of deep wisdom to maintain, maintain and guarantee the continuity of natural resources and the environment. Salikin (2003) mentions there are three philosophical aspects in sustainable agriculture, namely: (1) Environmental awareness. This means that sustainable agriculture must be in harmony with the ecological system and natural balance. (2) Economic value. The system of sustainable agriculture philosophically contains profit and loss considerations, for communities within and outside the ecosystem for human welfare and the environment. (3) Community-based character. Sustainable farming systems must be in harmony with social and cultural norms, and local wisdom that is embraced and upheld by the surrounding community.

In line with the philosophy of sustainable agriculture, it turns out that Indonesia has a philosophical wealth of Tamansiswa teachings that can be used as a new perspective or way of looking at the philosophy of a sustainable farming system. Indeed Tamansiswa teachings from Ki Hadjar Dewantara did not directly speak of sustainable agriculture, but the heritage of the noble values of Tamansiswa also spoke about the nature of human life and the surrounding environment in a social context. This can be used as a philosophical guideline that is able to deliver on an objective critical understanding of how the application of this sustainable agricultural system is in harmony with the natural law.

The meeting point between the teachings of Ki Hadjar Dewantara and Tamansiswa philosophy values and sustainable farming systems lies in the

philosophical elements contained in both. Ki Hadjar Dewantara as the founder of Tamansiswa inherited the noble values of “ketamansiswaan” that were able to provide teachings, guidelines, concepts, fatwas and slogans to make life better (Suratman, 1987). Here is the role of the Tamansiswa philosophy with all the sharp intuition perspectives to be able to see whether the sustainable farming system can really have a positive impact on humans and the nature around it.

## **REVIEW OF RELATED LITERATURE**

The concept of sustainable development is an approach that arises from the concerns of many countries due to excessive exploitation of human resources, which has an impact on environmental health. Barbier (1987) stated that development should use natural resources available on earth for the benefit of humans by avoiding environmental damage and leaving it to future generations. Throughout the course of history, both developed, developing and underdeveloped countries have always faced a dilemma in determining their economic development priorities, especially in terms of food (Sudrajat, 2018). The threat to food security has resulted in Indonesia often importing food products, including rice. The concept of agricultural development in Indonesia in the 1950s was oriented towards meeting the needs of farmers or called subsistence agriculture. In the late 1960s, to meet food needs, the Indonesia Government adopted the technology of green revolution.

Green revolution is known as a program of using superior seeds, fertilizers, and chemical pesticides and good irrigation to increase agricultural production (Röling & van de Fliert, 1998). The aim was to achieve rice self-sufficiency which was then achieved in 1984 with evidence of the award of FAO to President Soeharto. This condition has not been able to deliver Indonesia into a permanent country in rice self-sufficiency. In the decade of the 1990s to 2000s, the negative effects of the use of fertilizers, seeds and chemical pesticides began to be felt by farmers. This is indicated by a decrease in soil fertility followed by a high dependence on fertilizers and genetically engineered seeds, the destruction of local rice varieties, the presence of pesticides that cause immunity to rice pests, and the destruction of natural predators that benefit farmers (Poerwanto & Wattimena, 2012). The impact of the green revolution gave rise to the concept of agricultural development which came to be known as a sustainable farming system.

A sustainable farming system is an environmentally friendly agricultural system that aims to improve the quality of human life and its natural surroundings. The Technical Advisory Committee of the Consultative Group on International Agricultural Research defines sustainable agriculture as successful natural resource management for agricultural enterprises to help change human needs while maintaining or improving environmental quality and conserving natural resources (Reijntjes *et al.*, 1999). In addition, FAO also defines sustainable agriculture as follows: “management and conservation of the natural resource base and the orientation of technological and institutional

change in such a manner to ensure the attainment of and continued satisfaction of human needs for present and future generation. Sustainable agricultural development conserves land, water, plant and animal genetic resources, does not damage the environment, is technically appropriate, economically feasible, and socially acceptable." (FAO, 1989).

Dankelman & Davidson (1988) explained that there were main characteristics that must be met from a sustainable farming system, namely: being able to maintain land loss, be able to increase farmers' income, be acceptable to the community and be able to implement technology effectively and continuously without dependence, develop patterns planting, having food processing methods and methods of storing good food supplies, increasing crop diversification to ensure the flexibility of cropping patterns, being able to maintain soil fertility through recycling organic matter, and being able to utilize water and energy sources as efficiently as possible.

Rukmana (2012) mentioned there were three basic principles of sustainability of sustainable farming systems, namely: (1) Economic sustainability. An agricultural system can be called sustainable if the agricultural system can carry out its agricultural activities economically. (2) Environmental sustainability. Sustainable farming systems are described as agricultural systems that do not cause negative impacts on natural ecosystems. (3) Social sustainability. This principle relates to the quality of life of farmers and the surrounding community, for example equal income or income in the production chain and employment for the wider community.

Salikin (2003) mentioned models of sustainable farming systems, i.e.: (1) Organic farming systems. This system is a system that uses organic materials, both living things and microorganisms which are important factors in the production process of crop cultivation whether it is agriculture, plantation, livestock, fisheries, or forestry. (2) Integrated farming system. This model combines plant cultivation, plantations, livestock, fisheries and waste processing in a harmonious and sustainable manner. There are two models, namely the conventional model and the EM (effective microorganism) technology model. (3) Low input farming systems. This model is known as the LEISA (Low External Input Sustainable Agriculture) method, which is an agricultural system that combines local resources with farming system components, thus providing a great synergy effect and being able to reduce environmental damage. (4) Integrated pest control system. This agricultural system uses technology to control pests in a comprehensive and ecological manner, so that it is not economically detrimental and able to maintain environmental sustainability.

Researches that were related to sustainable farming systems in the world, as well as in Indonesia, were quite numerous. Some researchers who use sustainable farming systems as research material i.e.: (Rodale, 1983; Madden, 1987; Hill & MacRae, 1988; Carter, 1989; Weil, 1990; Dobbs *et al.*, 1991; O'Connell, 1992; Conway, 1994; Swaminathan, 1997; Dahuri, 1998; Adnyana,

2001; Pretty *et al.*, 2003; Suryana, 2005; Rivai & Anugrah, 2011; Mahmuddin, 2013; Sudjana, 2013; and Ma'ruf, 2017).

A sustainable farming system that has a pattern of concern for the environment, economy and social can be approached with the perspective of Ki Hadjar Dewantara's noble teaching and Tamansiswa philosophical values which are the Indonesian cultural heritage. The touch of local wisdom in the culture of society and nationalism in the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophy values opened new insights to develop a model of a sustainable farming system that is in harmony and in line with the noble values of human life and its natural surroundings.

Ki Hadjar Dewantara is a national education figure. He was born with the name of Raden Mas Soewardi Soerjaningrat who later became known as Ki Hadjar Dewantara. He was born in Yogyakarta on May 2, 1889 and died on April 26, 1959 (Tauchid, 1968). His birthday was then commemorated every year by the Indonesian people as National Education Day. He was born to a noble family and is a child of GPH Soerjaningrat, grandson of Pakualam III. Because he was born as a noble, he was entitled to get education for the nobility. Ki Hadjar Dewantara was an Indonesian independence movement activist, journalist, politician, and pioneer of education for indigenous Indonesians from the Dutch colonial era. He was the founder of the Tamansiswa National College. Tamansiswa is an educational institution that provides opportunities for common natives to be able to obtain educational rights as well as "priyayi" and Dutch people. Ki Hadjar Dewantara and his friends founded the Tamansiswa National College which in the Dutch era was called "*Taman-Siswa Nationaal Onderwijs Instituut*" on July 3, 1922 (Tauchid, 1963).

Majelis Luhur Persatuan Tamansiswa (2013b) explain the basis of Tamansiswa is Pancadarma (the natural law, independence, culture, nationality, humanity) and its goal is to realize the ideals of humanity, the noble character of the nation and the ideals of Indonesian independence based on Pancasila and the 1945 Constitution. The vision is the realization of a cultural struggle institution and community development that uses education in the broadest sense as a means of building an orderly, peaceful, greeting and happy society, and also formidable and victorious. The mission is to preserve and develop Indonesia's national culture, realize an orderly, peaceful, greeting society and be happy in accordance with a just and prosperous society based on Pancasila, and to educate the life of the nation by sharpening the power of creativity, feeling and intention towards the birth and freedom of human development, noble character, and high human dignity.

"Ketamansiswaan" is the teaching of Ki Hadjar Dewantara's life and the noble values that are held in high esteem by Tamansiswa. Therefore, Tamansiswa is a place and form of Ki Hadjar Dewantara's teachings in the form of basic principles, joint organization, education system and ways of life as a condition of the implementation and realization of the ideals of human

life. Ki Hadjar Dewantara's sublime teachings vary, there are conceptual ones, practical operational instructions, fatwas, slogans, advice, etc. (Tauchid, 1963).

Conceptual teaching (Slamet & Swasono, 2012) namely: (a) Education: "Tri-education centers" (family, school, society), "among system" and "*tut wuri handayani*", family-based, and educational equity; (b) Cultural field: "Tri-con" (continuity, concentricity, convergence); (c) Politics sector: "Leadership trilogy", namely: "*ing ngarsa sung tuladha, madya mangun karsa, tut wuri handayani*". In addition there are also teachings in the form of practical operational guidelines, namely: (a) "Tri-Abstinence": abstinence from abuse of power, abstinence from misusing finance and abstinence from decency; (b) "Tri-centers of education": education in families, schools and societies; (c) "Tri-hayu": "*memayu hayuning sarira, bangsa lan manungsa*"; (d) "Tri-sakti jiwa": creativity, feeling, and intention; (e) "Tri-nga": "*ngerti, ngrasa, nglakoni*"; (f) "Tri-con": continuity, concentricity, convergence; (g) "Tri-co": cooperative, consultative, and corrective"; (h) "Tri-struggle": struggling to eradicate ignorance, poverty and underdevelopment; (i) "Tri-logi of leadership": "*ing ngarsa sung tuladha, ing madya mangun karsa, tut wuri handayani*"; (j) "Tri-n": "*niteni, nirokke, nambahi*".

The teaching of fatwas (Suratman, 1987) namely: (a) "*lawan sastra ngesti mulya*", meaning that science aspires to happiness and prosperity; (b) "*suci tata ngesti tunggal*", meaning that with the pure heart, in an orderly state aspires to unity and perfection; (c) "*Ning-neng-nung-nang*", which means that the mind is quiet, calm, silent, not easily emotional, has determination, strength of heart, finally gets victory with authority; (d) "*Ngandel-kendel-bandel-kandel*", *ngandel*: believe in God, be confident, *kendel*: brave because it is true, *bandel*: hardiness, *kandel*: thick (strong) faith; (e) "*Bibit-bebet-bobot*", meaning in forming a good family need to pay attention to *bibit* (child), *bebet* (parents who reduce), and *bobot* (quality of quality of life); (f) "Right of self to claim greetings and happiness", meaning that everyone has the right to happiness and well-being; (g) "Greetings of happiness should not violate the peace of society"; (h) "The realm of human life is round life", meaning human life is inseparable from its natural or ecological state; (i) "By being free from all ties and in holiness, we are obedient to the Son"; (j) "*Tetep-antep-mantep*": *tetep*: determination, unshakeable, *antep*: weight or quality in his life, and *mantep*: great, stick to the choice.

Researches or literature on sustainable farming systems that are viewed from the perspective of the Tamansiswa teachings are still very rare. Sunaryo (2015) wrote about organic agriculture which is seen from the perspective of the teachings of "Pancadarma: the natural law" in the form of book literature. In addition, studies on the implementation and relevance of the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophy values have more to do with the field of education in general, not agriculture. These studies include: (Wangid, 2009; Samho & Yasunari, 2010; Priwahyuningsih et

al., 2014; Muthoifin, 2015; Suparlan, 2015; Kasiyan, 2016; Rahma & Setiadi, 2016; Towaf, 2016; Warsito & Asrowi, 2017; Warsito & Widodo, 2018).

## **METHODOLOGY**

The method used in this study is the method of library research. In this method as much literature is extracted as much as possible relating to the life and teachings of Ki Hadjar Dewantara as well as the noble values of Tamansiswa philosophical and sustainable farming systems. Primary and secondary sources in this study were books on student affairs, i.e.: *Ki Hadjar Dewantara, Thought, Conception, Exemplary, Independent Attitude Part One: Education* (Majelis Luhur Persatuan Tamansiswa, 2013a); *Ki Hadjar Dewantara, Thought, Conception, Exemplary, Independent Attitude Part Two: Culture* (Majelis Luhur Persatuan Tamansiswa, 2013b); *The Life Struggle and Adjudication of Ki Hadjar Dewantara* (Tauchid, 1963), *Ketamansiswaan Principles* (Suratman, 1987), *Tamansiswa Culture & Community Development Institution* (Slamet & Swasono, 2012), while books on sustainable agriculture, i.e.: *Facilitating Sustainable Agriculture* (Röling & Wagemakers, 1998), *Future Agriculture: An Introduction to Sustainable Agriculture with Low External Input* (Reijntjes et al., 1999), *Sustainable Farming System* (Salikin, 2003).

Bodgan & Biklen (1998) states that the method of library research can be categorized as a qualitative descriptive study, because this study emphasizes the description of the thoughts or teachings of Ki Hadjar Dewantara and "ketamansiswaan" related to the philosophy of sustainable agriculture. This research is also in the form of explorative studies. In this explorative study, the form of research is essentially qualitative. Qualitative research is interpretation research. In qualitative research, researchers engage in ongoing experience and constantly examine existing literature (Cresswell (1994).

The approach used in this study is the scientific, normative, historical and biographical approach (Komaruddin, 1991). The literature used is normative books about history and biographies of Ki Hadjar Dewantara and Tamansiswa teachings which are used as perspective studies to see the development of scientific sustainable agriculture. The data found in this study were analyzed by comparing reading material from existing books and then describing it. What is described more on things that are related even though not directly, but there are still links, especially those related to the philosophy and noble values in it.

In this literature study used data analysis techniques called content analysis. Suryabrata (1998) explains that content analysis is a technique of analyzing data in accordance with its content. The data collected is descriptive in nature and is a phenomenal-philosophical textual data, meaning that the data containing philosophical findings are analyzed scientifically. With this analysis technique, scientifically and comprehensively, the teachings of Ki Hadjar Dewantara and Tamansiswa philosophy and sustainable agriculture will be studied comparatively, descriptively, and inductively.

## **FINDINGS AND DISCUSSION**

From the results of the literature research found several thematic perspectives on the philosophy of sustainable agriculture system compatibility with the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophical values, namely: the purpose and basic principles of sustainable farming systems; farmers-based sustainable farming systems; local wisdom in sustainable agriculture; food security and independence; and elements of education and teaching in sustainable agriculture.

### **The purpose and basic principles of sustainable farming systems**

Sustainable farming systems are environmentally sound agricultural systems, which aim to improve the quality of life with economic, ecological and social sustainability. To achieve this, several activities strategies are needed (Manguiat, 1995), namely: increasing economic development, prioritizing food sufficiency, increasing human resource development, empowering and liberating farmers, maintaining environmental stability, and increasing productivity in the long run. The strategy of this activity focuses on the environment or natural sector, so that the sustainable farming system can carry out sustainable farming activities.

From the perspective of the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophical values it can be seen that there is a correlation between the relationship with the objectives and the basic principles of a sustainable agricultural system. Ecology or the environment, in which there are elements of life, namely human beings and their natural environment can be perspective on the basis of Tamansiswa, namely "the natural law" (Pancadarma), and also from one of the fatwas, which reads: "the realm of human life is the world of life is rounded".

The term "the natural law" (Pancadarma) from Tamansiswa wants to explain the matter of nationality with its natural characteristics that come from the Almighty God. This view of Ki Hadjar Dewantara wants to characterize the spirit of nationalism which should be born from every human being. With the "the natural law", each of the humans is looking for their forms and habits, even with different backgrounds. Nevertheless, this view can be implemented into the philosophy of a sustainable farming system, that ecology or the environment cannot be separated from its own nature. Term "the natural law" can be used as a guide for human life and its natural surroundings. "the natural law" becomes the embodiment of the nature of the birth of order in this universe. Therefore, humans must maintain the balance of nature, so that nature remains sustainable according to its nature.

In one of the fatwas of Ki Hadjar Dewantara, it was stated: "the realm of human life is a rounded life". This view is a view of the fatwa for independent life. Each human being is in an interconnected natural environment, such as forming an endless round circle, in which there is a natural self, nationality, and human nature in humans. The fatwa can be a separate philosophical perspective in relation to a sustainable farming system that humans and

nature are an inseparable entity. Land, water, air, microorganisms, sunlight, plants and animals create a separate wheel of continuity for humans as actors in the world of agriculture.

### **Farmer-based sustainable farming system**

Sustainable agriculture is the right agricultural system to continue to be pursued because it has a positive tendency (Goering, 1993), namely: change in farmer's behavior, demand for organic products, linkages between farmers and consumers and policy changes. From this reason, sustainability needs to be pursued by a farmer-based sustainable farming system. Human existence of farmers needs to be considered considering farmers are always symbolized as human beings who "lose" and eroded with a capitalist development culture that does not favor the farmers.

The dependence of farmers on nature can be a threat to themselves, when nature has been polluted by unhealthy chemicals. In addition, the role of macro institutions that do not take sides with farmers also makes its own threats to farmers who lose out to marketing agricultural products under the law of economic demand. Agricultural science and technology is present to replace farm labor and this has become a new dominance in the world of agriculture.

This farmer-based sustainable farming system is in line with Ki Hadjar Dewantara's noble teaching views and Tamansiswa's philosophical values of human existence, namely in the fatwa which reads: "the right of self to demand happy greetings". This means that farmers as humans have the right to get happiness, safety and well-being. In addition, in the Tamansiswa practical operational guideline there was an expression: "Tri-hayu": "*memayu hayuning sarira, memayu hayuning bangsa, lan memayu hayuning manungsa*". This means that humans can make themselves happy, their nation, and also their neighbors. In this case, the farmer as a farmer has the right to gain inner independence, well-being and happiness, so that he is able to build a life together with nature and each other.

### **Local wisdom in sustainable agriculture**

Pretty & Chambers (1994) explains that local wisdom is basically the practices and habits carried out by local communities that are based on traditional knowledge or technology that has been proven to be good and useful and continues to be lived from generation to generation. Local wisdom in a sustainable farming system aims to minimize the occurrence of plant pest disturbances, adjust to local natural characteristics, and utilize natural resources optimally in harmony with the natural law. Examples of local wisdom in lowland rice farming, i.e.: making plots of rice fields with boundary embankments whose plot area is adjusted to the slope of the land (terracing system), formation of *surjan* land followed by planting various types of plants on one stretch, etc.

From the understanding of local wisdom, it was found that the value was matched with the noble teachings of Ki Hadjar Dewantara and the values of the Tamansiswa philosophy, namely "the natural law" (Pancadarma). "The natural law" characterizes the harmony of human beings with their natural surroundings. The surrounding environment and nature must be managed and utilized according to their nature and not to be pursued as maximally as possible without paying attention to local wisdom that has lived and developed for generations. This can be said to be in line with one of Tamansiswa's motto "from nature to culture", from agricultural nature to local wisdom as a culture that is in harmony with "the natural law".

From the practical operational guidelines of the teachings of Ki Hadjar Dewantara there is the term "Tri-con", which includes continuity, concentricity and convergence. Continuity is intended as an effort to continue to live local wisdom as a local indigenous culture that is in harmony with the natural environment. Concentricity means to make global culture outside the original culture (local wisdom) while upholding personality. Convergence is more about combining local wisdom with outside culture (which is appropriate) as selectively and as adaptively as possible.

### **Food security and independence**

Sustainable farming systems have five dimensions (Salikin, 2003), namely: ecological nuances, economic feasibility, cultural appropriateness, social awareness, and a holistic approach. These dimensions aim to realize food resilience and independence, improve human resources, improve quality of life, and preserve natural resources through proactive, participatory and dynamic hard work, or in other words, "better environment, better farming, and better living".

Law No. 18 Year 2012 concerning food states that food security is a condition of fulfilling food for countries or individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, evenly distributed and affordable, while food independence is the ability of the state and nation to produce diverse foods that can guarantee the fulfillment of adequate food needs by utilizing the potential of natural, human, social, economic and local wisdom resources in a dignified manner (Humas Departemen Pertanian, 2012).

The noble teaching perspective of Ki Hadjar Dewantara and Tamansiswa philosophy values saw a conformity with the philosophy of food security and independence in a sustainable farming system, namely at "Pancadarma" on the principle of self-independence. It means that independence as a gift of the Almighty God is the right to regulate one's own life (*zelfberchikkingsrecht*). Everyone has the right to regulate and make their own efforts to fulfill their own food needs in a dignified manner, not to depend on others. This is in line with the pattern of food security and independence, all of which are for the common good.

In addition there are teachings in the form of fatwa stating: "the right of self to claim greetings and happiness" and "greetings and happiness of self must not violate the peace of society". This means that birth and inner safety, happiness in the heart is achieved by the adequacy of food for the necessities of life and independence of his soul, free from physical and mental disturbances, and free from fear of food shortages. Greetings and happy yourself should not violate the peace of the people, meaning that each person does not interfere with the inner happiness of others. With food resilience and independence, humans can experience inner happiness. Efforts to realize this happiness must not interfere with happiness and public life (*maatschappelijke saamhorigheid*).

### **Elements of education and teaching in sustainable agriculture**

In a sustainable farming system there are elements of education and teaching through farmer groups in the community, agricultural extension institutions in the field, as well as formal agricultural education and teaching in schools and colleges. Manuwoto (2012) explained that the arrangement of agricultural education, especially agricultural higher education needs to be done immediately to minimize the gap between the world of education and the world of work and increase relevance to regional development needs as a pillar of regional development and national development. Four aspects that cannot be abandoned are research, regional development, internationalization and university social responsibility.

Ki Hadjar Dewantara founded the Taman Tani Tamansiswa School at the high school level on June 19, 1944 in Yogyakarta (Majelis Luhur Persatuan Tamansiswa, 2013a). The purpose of opening the school is to train young people at that time to be skilled in agriculture, be able to produce agricultural products, create their own jobs, and can fill the shortage of teachers and agricultural extension workers in the field. Ki Hadjar Dewantara's ideals were continued by his students, Ki Dr. Sarino Mangunpranoto in 1982-1983 to initiate the establishment of the Faculty of Agriculture, Sarjanawiyata Tamansiswa University. Since the academic year 1983/1984 officially changed to the Faculty of Agriculture, Department of Agriculture, and in the academic year 1984/1985 a new department was opened, namely the Department of Social Economics of Agriculture.

The problem of education and teaching in agriculture is in line with the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophy values which are conceptual in nature, especially in the field of education, namely "Tri-education centers" (schools, families and societies) meaning knowledge is taught in schools agriculture, for example how to plant and care for rice, secondary crops, horticulture, etc. until post-harvest; in the family are taught how to plant and care for vegetable crops and other plants for daily living needs; and in the community taught and trained to plant and care for plants for the needs of the surrounding community.

Besides "Tri-education centers", there is "among system". The "among system" (from the word Javanese language: "ngemong", means guiding or nurturing)

is a typical family-friendly student education system that is based on "the natural law" (as a condition to achieve inner and best progress as well as possible) and "self-independence" and move the inner and outer strength of students, so they can think and act independently). Here the lecturer acts as a "pamong" (the term *Ki* for men and *Nyi* for women) for student colleges.

In addition there is also a term called "tri-logi education" (*ing ngarsa sung tuladha, ing madya mangun karsa, tut wuri handayani*). This means that "*ing ngarsa sung tuladha*" in front gives a good example; for example, saying polite words, doing good and polite actions, dressing neatly, giving examples of correct rice cultivation, carrying out agricultural practices seriously, etc. "*Ing madya mangun karsa*" means that in the middle gives spirit, good motivation; for example providing a spirit of learning, discipline, and independence. "*Tut wuri handayani*" means that from behind gives impetus, encouragement, independence and power of influence to the student colleges.

## **CONCLUSION**

Sustainable agriculture is an environmentally sound agricultural system that promotes the values of ecological, economic and social sustainability. This agricultural system aims to improve the quality of life of natural resources and human resources, so that it can continue to be pursued continuously. Healthy and quality agricultural products produced from this sustainable farming system can be enjoyed by subsequent generations on an ongoing basis, so that through agriculture it can create healthy and quality generations to build the nation.

The findings of this study are that there is a conformity of views in terms of: (1) the objectives and basic principles of sustainable farming systems that are in line with the noble teachings of Ki Hadjar Dewantara and Tamansiswa philosophical values, namely on the basis of Tamansiswa "the natural law" (Pancadarma), and fatwa: "the realm of human life is round life." (2) farmer-based sustainable farming systems. This is in line with the noble teachings of Ki Hadjar Dewantara and the Tamansiswa philosophical values concerning human existence, namely in the fatwa: "the right of self to demand happy greetings" and "*Tri hayu: memayu hayuning sarira, bangsa, lan manungsa*". (3) local wisdom in sustainable agriculture. This view is in line with "the natural law" (Pancadarma), the slogan of the Tamansiswa "from nature to culture", and the views of "Tri-con", including continuity, concentricity and convergence. (4) Food security and independence. This view is in line with the principle of self-independence (*zelfbeschikkingsrecht*) and "the right of self to demand greetings and happiness" and "greetings and happiness of ourselves should not violate the peace of society" (5) Elements of education and teaching in sustainable agriculture. These elements are in accordance with the views of the "tri-education centers" (family, school, society), "among system", and "tri-logy of education", namely "*ing ngarsa sung tuladha, ing madya mangun karsa, tut wuri handayani*".

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