

# Sustainable agricultural development through agribusiness approach and provision of location specific technology In North Sulawesi

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**Abstract.** The agricultural sector until the next few decades will still be the basis of economic growth for the community and the regional economy in North Sulawesi. The economic value of businesses in this sector has the potential to increase if all the main actors and supporting actors take on a more professional role. The problem is still weak linkages between sub-systems that injure the mindset of the farming community, Natural Resource Management, and the environment, which in the long run will hinder the sustainability of agricultural development. This article is a review that aims to increase agricultural productivity through agribusiness approaches and site-specific technologies by optimizing the utilization of natural and human resources and implementing sustainable technologies. Literature review and field observations were conducted using secondary data to determine the factors that affect the success of sustainable agricultural development through agribusiness approaches and site-specific technologies. On-farm development can be achieved through sustainable agriculture system approach, implementation of Agricultural Integration, Agroindustry Development, and agribusiness system. The hope of sustainable agricultural development in the future is the availability of unlimited resources, good interaction between agribusiness actors, and an increasingly qualified environment, flexibility in agribusiness activities.

## 1 Introduction

The contribution of the agricultural sector to the economy of the North Sulawesi region from year to year tends to decrease although the cumulative value increases. Until the next few decades, the agricultural sector in this region is still considered the base of economic growth because it still involves about 55-65% of the existing labor force. [1] states that out of 74,754

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villages in Indonesia, 73.14% are classified as agricultural villages. Therefore, the development of the agricultural sector, especially in rural areas in this area, must be related to village development.

Agricultural development policy has not been able to realize agricultural businesses that produce competitive products to meet the needs of domestic and global markets. In the agribusiness system, farmers are the main actors in the acquisition of production, and income is still low. [2] it was revealed that the factors that affect the reduced interest of young workers in the agricultural sector are: 1) the agricultural sector is considered less prestigious, high risk, less stable and sustainable income; 2) the area of land controlled is increasingly limited, 3) the lack of development of various businesses and industries, both agricultural and non-agricultural sectors in the village; 4) lack of policy support for young farmers or beginner farmers; and 5) the tendency of the perspective of the younger generation in the postmodern era.

Agribusiness is a system of a series of businesses ranging from procurement of production facilities, planting, post-harvest business, storage sorting business, and packaging of agricultural products as well as several supporting activities that serve the system such as information service agencies, and government agencies that issue related policies and regulations [3].

Location-specific technology is a technology that with certain conditions, is able to overcome existing problems and provide superior outcomes compared to general technology [4]. Location-specific technology is a technology whose resources can come from the farmers themselves and introductions from outside the farmers are internalized continuously. Integrated agriculture is an agricultural pattern that supports each other from one commodity to another so that production costs can be reduced as much as possible by utilizing other commodities that are planted or managed simultaneously in the farming unit [5].

The availability of agricultural resources in North Sulawesi, especially land and Klim, is still quite promising if land management can be managed in an integrated, intensive, commercial manner, applying site-specific technology, and linkages between sub-sub systems in the agribusiness system. the system is built. Management of agricultural enterprises, especially those managed by family farmers, generally only low income per agricultural unit. There is still a lot of land in agricultural land management. The income obtained is only about Rp 1-2 million/ha/month, preferably designed with a minimum income of about Rp 50-100 million/ha/year. A major contributing factor is that the available resources and technologies have not been managed in an integrated, intensive yet commercial agriculture-oriented manner. Currently about 90% of agricultural land managed by farmers is still managed conventionally and subsystems.

The results showed that some densely populated areas showed a decrease in land carrying capacity and a decrease in the number of farmers, which required efforts to increase productivity, intensification, and application of certain technologies, as well as the selection of appropriate commodities. [6,7] in fact, most of the agricultural areas are densely populated areas there is still a lot of untapped agricultural land potential. The implementation of agricultural business management requires fundamental changes starting from the design of each agricultural land with integrated resource management. The agricultural system is expected to ensure the livelihood of farmers and their families by providing rational food and basic needs without neglecting environmental damage and for its acceleration to build a stronger bargaining position of farmers in the agribusiness system.

Many agricultural development programs during their implementation are not in accordance with the conditions of natural resources and human resources in the region and have an impact on the sustainability of agricultural development, especially agricultural land managed by farmers. Environmental issues and agricultural land degradation have occurred in various regions due to errors in the implementation of agricultural development programs

in the region. This phenomenon is generally seen in agricultural activities that do not / have not met the technical and environmental requirements resulting in inhibition of the sustainability of agricultural development. This condition makes it increasingly difficult to design sustainable agricultural development and be able to meet food needs for domestic and global markets.

To accelerate agricultural development in each region, it is necessary to prepare site-specific technological innovations that can mobilize farmers to manage intensive and commercial agriculture. Based on the above problems, this paper wants to discuss the concept of sustainable agricultural development, the phenomenon of unsustainable agriculture, agribusiness system approach, and site-specific agricultural technology, as well as the expectations of sustainable agricultural business development in North Sulawesi.

## **2 Methods**

This paper is a literature review of various field studies and observations aimed at identifying factors that influence the success of sustainable agricultural development, the effectiveness of agribusiness approaches, and site-specific technologies. The Data and information used are secondary data and previous research results. Data and information were analyzed qualitatively and descriptively.

## **3 Results and Discussion**

### **3.1 Conception of sustainable agricultural development**

Agricultural development is a process that continuously creates social change and economic growth based on agricultural business oriented to changes in agricultural production processes, farmer behavior, agricultural patterns, the relationship between costs and receipts, and management in business. Sustainable agricultural development can be interpreted as an effort to manage and preserve agricultural resources (soil, water, genetic resources) through the orientation of technological and institutional changes in such a way as to ensure the achievement of the necessary needs sustainably from generation to generation [8].

[9] defines sustainable agriculture as a human activity to produce food and fiber that can provide benefits or well-being for all of humanity now and in the future in a sustainable manner through the efficient use of resources, the application of technology that is friendly, and the carrying capacity of the environment, a resilient local economy, and effective governance. Furthermore [10] identifies sustainable agricultural development, maximizing the net benefits of economic development operationally on the condition that it can maintain and improve the overall service, quality, and quantity of Natural Resources. From this understanding, several criteria must be met in a sustainable relationship, namely: (1) utilization of natural resources for recovery (renewable) with a rate that is less or equal to the rate of natural recovery; and (2) optimization of the utilization of non-renewable natural resources provided that the level of substitution between resources and technological progress is achieved. Agricultural sustainability is an important first step in establishing a broad vision of its assessment and guiding questions about sustainability [11] argues that sustainable agricultural systems are a new phenomenon that began to develop in the 1990s. This agricultural system emerged as an answer to various problems due to the application of conventional agricultural systems that use chemicals such as chemical fertilizers and pesticides [11].

Sustainability agriculture needs to involve a comprehensive and integrated approach to economic, social, and environmental processes for well-being. It requires the participation of

diverse stakeholders and perspectives to develop joint action plans for development [12]. Sustainable agricultural development maximizes the net benefits of economic development operationally provided that it can maintain and improve the service, quality, and quantity of natural resources. [13] states that sustainable agriculture includes considering economic, social, and environmental issues related to agriculture. It is further stated by [12] that sustainability agriculture needs to involve a comprehensive and integrated approach to economic, social, and environmental processes for well-being and requires the participation of diverse stakeholders and perspectives to develop a joint action plan for the construction of.

The application of the concept of agricultural sustainability is very complex in terms of local, national, and global issues. In general, seven problems can be distinguished in applying these concepts: (1) capital integration; (2) maintaining resilience, adaptation, and transformation; (3) ensuring system performance; (4) engaging stakeholders; (5) combining interdisciplinary views; (6) scale integration; and (7) practicing good governance [14]. The agricultural system consists of social, economic, and environmental systems of the system which create resilience in agricultural systems through adaptation and interaction between the system [15]. Integrating interdisciplinary (biophysical, social, and economic) concepts, ideas and methodologies is critical to understanding agricultural sustainability because of the fundamental interrelationships between natural and socioeconomic aspects of sustainability [16]. Economic development should be in line with environmental and social development [17,18].

One of the agricultural systems that is the application of sustainable agricultural systems is the organic farming system. An organic farming system is a sustainable way of farming [19] Organic farming systems are holistic and unique production management systems that promote and improve the health of agroecosystems, including biodiversity, biological cycles, and soil biological activity to optimize crop production. This is done using agronomic, biological, and mechanical on-farm methods with the exclusion of all synthetic off-farm inputs. [20,21] emphasized two main aspects in organic farming: the use of manure and other organic matter as fertilizers and the use of biological, rather than chemical, pest control.

The four principles of organic farming, according to the International Federation of Organic Farming Movements [22] are as follows: (1) organic agriculture must be sustainable and promote the health of the soil, plants, animals, people, and the planet as one and indivisible (health principles), and (2) organic farming should be based on living ecological systems and cycles, working with them, imitating them, and helping to sustain them (ecological principles). 3. Organic farming must be built on relationships that ensure fairness concerning the environment and life 4. Organic agriculture must be managed in preventive and responsible measures to protect the health and well-being of current and future generations and the environment (principles of care).

The fundamental difference between organic and conventional management systems is how problems are addressed. Conventional agriculture often relies on targeted, short-term solutions. Organic farming is not only based on a short-term economy but also takes into account the concept of ecology. The most important components of the organic farming system (are crop and Soil Management, waste recycling on farm land, non-chemical weeds management, and integrated intensive farming systems [19].

### **3.2 The Phenomenon of unsustainability of agricultural development**

Indonesia is a country that has a comparative advantage (comparative advantage) in the agricultural sector, this advantage is a fundamental capital for economic growth that needs to be encouraged and managed properly. Agricultural development policies that have been carried out in the past still tend to be dominated by economic thinking that is only focused

on driving production and economic growth. From these strategies and implementation and policies, in addition to obtaining many positive impacts, it is also inseparable from the acquisition of negative impacts related to technological by-products on the environment and their effects on socio-economic aspects. [23] suggests that the current state of agriculture is unsustainable, as physical yield is a measure of the success of the sustainability of agricultural production. Now is the time for farmers to transform their agricultural management system into an integrated business system that does not harm the environment and generates income that ensures more adequate and sustainable income.

Increasing agricultural production and income without following government structural policies in making regulations/laws, competition, distribution, production, and food consumption that protect farmers will not be able to improve the welfare of farmers to a better level. Sustainable agricultural development efforts can be influenced by local government policy factors, such as policies providing modern agricultural infrastructure, increasing agricultural productivity with nanotechnology, and increasing investment in agriculture [24,25].

The application of agricultural development is only oriented to achieving higher production and income, which will ultimately have an impact on changes that lead to the destruction of Natural Resources and the environment. The implementation of conventional agricultural development that damages the environment will ultimately burden the social and economic conditions of most communities in the future.

Some phenomena of unsustainable agricultural development during this time, namely:

### ***3.2.1 Low product exchange rate***

One of the measuring tools to see the dynamics of the level of welfare of farmers is the agricultural exchange rate which includes the exchange rate of agricultural commodities related to the strength of the exchange/purchasing power of agricultural commodities to other commodities/production exchanged. Until now, the acquisition of economic value from agricultural products, especially those managed by farmers, the economic value is still dominant and only obtained from primary products, while various cultivation and processing technologies were introduced 20-30 years ago. The various forms of agricultural products produced by farmers about 25-50 years ago are also almost the same as the forms produced now (not much has changed). For example, one of the leading commodities in North Sulawesi is coconut, until now the economic value of coconut from farmers is still dominant with granular coconut and copra products. About 5-6 decades ago the load of 1 kg of copra was equivalent to the value of 2-3 kg of rice but now the price of 1 kg of rice is equivalent to the price of almost 2 kg of copra, coconut cultivation management is still dominant in monoculture cultivation. While the economic value of coconut can be obtained at least 10 processed coconut products and land between coconuts can be planted with various crop commodities and livestock businesses. In addition, almost all coconut tree stands of farming communities are in one region (Village, district, regency, and province) but the coconut marketing system is almost only managed individually. Success is no longer measured by a single transaction; competition is evaluated as a network of cooperating firms competing with other firms along the entire chain [26].

### ***3.2.2 Land ownership heritage system***

The results of research on land ownership in North Sulawesi province that until 1999 in this area has reached 30% of farmers who become farm laborers (no land). The main factor causing this is the implementation of the inheritance system of agricultural land ownership that is relatively the same for each family member. In the long run, such conditions will be

difficult to realize sustainable agricultural development and difficult to create a commercial, modern, and independent farm management system.

### 3.2.3. *Location-specific technology is less available*

[18] states that there are at least three factors that suppress the carrying capacity of agricultural land, both individually and together, namely the scarcity of land and water resources, development dynamics, and population increase. The carrying capacity of the land in this region is likely to still achieve higher product values if it is managed in an integrated manner and applies site-specific technology packages. The agricultural technology package implemented is still not carefully combined with the available local resources. In general, farmers are still less careful to implement integrated technology with local resources into a business that is intensive, profitable, and can manage the efficiency of allocated inputs. The fundamental weakness to date is that there is no complete basic data on the potential of local resources and the need for special agricultural technology packages in each region.

The empowerment of farmers should include upstream and downstream processes and should be oriented towards sustainable agriculture. Efforts to implement sustainable agriculture can preserve agricultural land so as not to reduce the benefits in the future. Sustainable agricultural development must be realized so that the existence of Agriculture is maintained. Innovation and technology in agriculture are needed to transform conventional agriculture into modern agriculture [27,28,]. The relatively low knowledge and skills of farmers in implementing the balance of input use causes relatively low production and income and agricultural management hurts the environment.

Innovation can be accepted or not by farmers, seen from the aspects of (1) socio-cultural values, (2) ideas that have been introduced before, and/or (3) farmers' need for innovation [29]. Environmental modification or ecological manipulation can suppress the development of plant diseases if done by selectively managing the cultivation components, namely (1) utilizing superior cultivars that are resistant to pests and diseases; (2) certified seeds; (3) perfect soil treatment (4) utilization of organic matter; (5) the same planting time in the right location; (6) the addition of balanced fertilizer, and (7) regular watering [29]. The follow-up that must be done is to provide socialization and understanding to the farming community that the implementation of each farm is a family farm business that must be managed commercially and professionally (gradually and quickly) and requires the integration of all parties involved. in the order of the agribusiness system.

### 3.2.4. *Low entrepreneur behavior*

During this time many farming activities are still considered as a traditional business, just to meet the needs of the family. That is why more dominant farming activities have not been managed intensively and professionally by farmers, resulting in low income per unit area of farming units. Farmers who are professional and have high entrepreneurial behavior will be able to empower all potential resources optimally, among others, in the form of efficient use of inputs such as integration efforts between plants and livestock can easily be done, especially in terms of utilization of plant waste for feed and feces/urine of livestock for fertilizer. Transfer of new technologies in accordance with the needs of farmers with a household business management system business-scale farmers gradually and quickly will be actualized if the behavior of the entrepreneur increasingly imprinted. Thus, the carrier of technology as a supporting element in the agribusiness system has the knowledge of the ability to innovate and entrepreneur.

### **3.2.5. Weak institutional system of farmers**

Until now, the big problem in the implementation of agricultural development in North Sulawesi in the past until now is related to low community participation which indicates that it is difficult to continue the programs introduced. Many programs/projects were implemented including technology transferred, but only a few continued. The main cause of this condition is due to the implementation of development that tends to be centralized and the lack of efforts towards the empowerment of the farming community as a target. More farmers are only placed as objects of development activities and the implementation of activities tends to be made uniform without much attention to the level of development of local institutional capacity. Making farmers as subjects or main actors in development is always through changes to the paradigm of empowerment and community participation. To realize this condition, it is necessary to develop farmer institutions based on local resources, which means a process towards improving relations between people in society which in turn can form the desired institutions. The institution that must be built is the economic institution of the peasant community; there have been many programs that lead to the establishment of peasant economic institutions, but until now such economic institutions have not been built.

### **3.2.6. Coordination and commitment of the agency scope of Agriculture is weak**

The implementation of agricultural development in the past and even today is still impressed dispersal and there has been no mutual coordination between the relevant agencies. Some identification reports show that the profile of farmers in general does not only depend on one commodity, the source of income of farmers generally consists of several commodities in one unit or several farmlands. Therefore, the farmer development system must always be carried out in an integrated manner based on the potential of resources and types of commodities managed by farmers. The fact that has happened so far is that the farmer guidance system has only been partially carried out in a series of one farming unit. The main objective of farmers in managing the farm is the amount of income earned in each period (daily, weekly, monthly and annually) to be able to meet all the needs of farming families and socio-cultural activities in rural areas.

## **3.3 Agribusiness systems approach and site-specific agricultural technology**

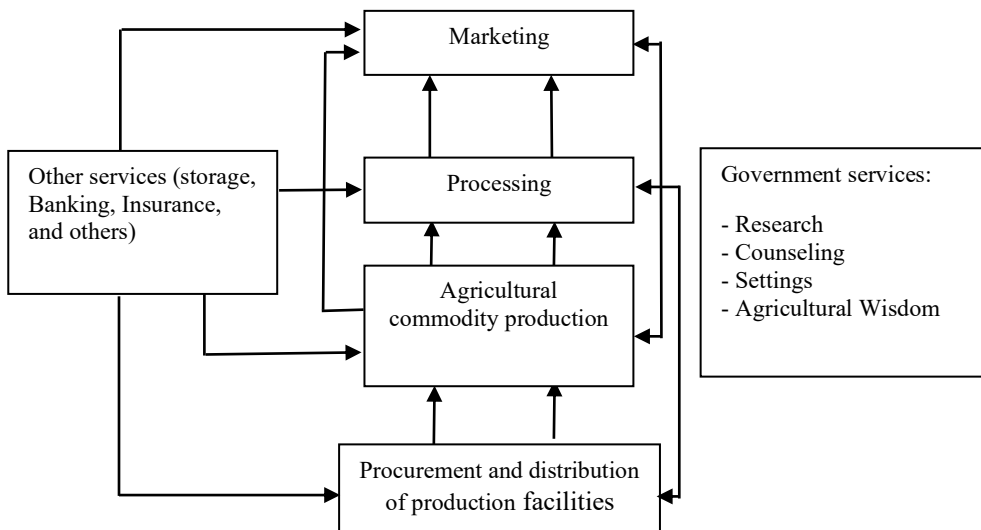
The broad system of agribusiness was introduced in the middle of the last century by Davis and Goldberg [30] the definition of agribusiness includes the total of all operations involved in the manufacture and distribution of agricultural supplies, production operations, storage, processing, and distribution of agricultural commodities. According to [31], agribusiness is defined as a series of interrelated sub-sectors comprising: (1) genetic and seed stock companies, (2) input suppliers, (3) agricultural producers, (4) traders or first handers, (5) processors, (6) retailers and (7) consumers. The agribusiness sector can be visualized as a vertical "wedge" of an economy made up of many parts where consumers become producers of goods and services related to agricultural operations.

Based on the application of the definition of agribusiness according to global data, food and agribusiness systems are the largest economic sectors in the world economy represent 50% of global assets, 50% of the global labor force, and 50% of global consumers [32-35]. In developed countries with agriculture being a relatively small part of the economy, the agribusiness sector generates significant economic activity. According to [36-38] agribusiness activities can be represented in two-dimensional ways i.e., (1) as a series from producer to consumer (transitional, supply-oriented chain), and (2) as a three-dimensional sphere of business activities, where firms interact with each other in the market along the

entire chain reflecting the real relationship of consumers as determining factors (demand-driven chain or web). [39] identified three basic forces driving the change of the modern agribusiness sector to (this stage of development in general: ((1) globalization of markets, (2) rapid advances in technology, and (3) greater involvement of people in what is produced and how it is produced. These changes affect the competitive environment of agricultural enterprises and affect the structural and conceptual choices for decisions in the future. [32] market access, intensity of competition, and market forces have been identified among the major (external) factors that determine the contemporary economic prosperity of producers in agribusiness.

The crux of the structural and economic changes that have taken place in agribusiness over the last decade is revealed by [26] such as transformations in suppliers and customers which are closely linked along a series of events that present raw materials from its source of supply through different value-adding activities to the final consumer. That is, success is no longer measured by a single transaction; competition is evaluated as a network of cooperating companies competing with other companies along the entire food chain.

The practical emphasis on agribusiness includes (1) subsystem of procurement and distribution of production advice, technology, and agricultural resource development, (2) subsystem of agricultural or farm production, (3) subsystem of processing agricultural or agro-industrial products, (4) subsystem of distribution and marketing of agricultural products, and (5) subsystem of support. Thus, the agribusiness system is a series of continuous activities from upstream to downstream. The success of agribusiness development is highly dependent on the progress that can be achieved at each node of the subsystem. An agribusiness activity does not necessarily have to be shown by the vertical integration of the provision of means of production to its market. The important thing here is the element of coordination and mutual support between the actors of one sub with other subsystems. The structure of the components of agribusiness can be presented in Figure 1.



**Fig. 1.** Linkages between subsystems in agribusiness activities [47]

Agribusiness development is highly dependent on ecosystem and environmental factors such as: land, water, diversity of biological resources and climate. Therefore, agricultural development carried out through an agribusiness approach that can grow sustainably, should be directed to have high capabilities consistently and continuously in the natural environment



where agribusiness is developed. It will be successful if at each node of the agribusiness subsystem can set the tasks to be achieved proportionally between economic benefits and social and ecological aspects.

Sustainable agricultural development strategy in the subsystem of production or "on farm" is through the implementation of site-specific agricultural technology packages based on local resource needs, namely:

- a). Have technical feasibility, where the technology applied is always easily and practically applied.
- b). Economically feasible, where the technology applied will give favorable results.
- c). Have a social/cultural feasibility, where the technology applied is always generally acceptable to the public at large.
- d). Have environmental feasibility in which the technology applied is not damage the environment or can ensure the sustainability of Natural Resources.

The most relevant method in the development of farming or "On Farm" or subsystem production is through the Framing System approach several crop rotation and planting integration, organic material recycling, land conversion processing, reduction of chemical inputs (LISA = Low Input Sustainable Agriculture). Integrated Pest Control and livestock production systems will benefit economically, socially, and environmentally maximally if the other subsystems in the agribusiness system are well managed. The products produced in this production subsystem are not only in meeting local/domestic needs, but also for export markets so that quality assurance is needed (ISO 9,000) and product assurance comes from a process that does not damage the environment (ISO 14,000). The development of organic agriculture is the implementation of sustainable agricultural development. Organic farming is a holistic farming system that supports and accelerates biodiversity, biological cycles and soil biological activity. Certification of organic products produced, storage, processing, post-harvest and marketing according to standards set by the standardization [40]. So far organic agricultural products more and more people are beginning to realize the benefits for health, demand for organic agricultural products is increasing. Developing countries such as Indonesia, organic food is still a new thing and began to be popular in these two decades.

Several studies have shown that organic farming provides greater benefits and has a real impact on farmers' income [41,42]. Furthermore, it is stated [43,44] that the intensity of consumption of organic products is getting higher. Generally, various agricultural products for food in the modern market show higher prices than conventional food products, such as in North Sulawesi the price of organic rice and vegetables is about 2 times that of conventional food products.

In other subsystems such as in the processing of products (agroindustry), it is immediately followed up with sustainable waste treatment activities, it is sought that the processed waste will be re-input in the production process of farming or other businesses. This means that the waste that can be processed to produce products into inputs in the production process of mutual support farms. For example, if a coconut industry business is built, it has the opportunity to produce about 4-6 processed products until now, which are still dominant in the form of waste. Coconut meat pulp can be produced as feed and food, coconut water can be processed for nata de coco Products, syrup, vinegar, and complementary materials for the manufacture of liquid fertilizers, shells produce charcoal, coir for mattresses, upholstery, ropes and cocopit. At least about 10-15 processed products of economic value from coconut products. The development of the coconut industry in this area is still very prospective if the development is through a value chain approach, so far, the financial value of coconut from farmers is only obtained singly from coconut meat (coconut granules and copra and a little from the shell). The development of the coconut industry produces a minimum of about 6 processed products, through the value chain approach there is an opportunity to increase the

price of coconut fruit by about 25-50% of the value of the primary product of granulated coconut or copra.

### **3.4 Hope in the future**

Agricultural development in Indonesia is currently focused on the development of sustainable agriculture (sustainable agriculture) which is part of the implementation of sustainable development (sustainable development). Sustainable agricultural systems utilize factors of economic production inputs that will result in high agricultural productivity by considering socio-economic, cultural, and environmental maintenance factors [45]

In realizing sustainable agricultural development, each program that is made always pays attention to the conditions in each region and does not generalize the same pattern for each region. Each region has many differences that cannot be generalized just like that, the problem is the difference in geographical conditions, socioeconomic conditions and differences in value systems or cultures. The existence of differences in resource potential should be for future development can reduce the risk of failure so far in any agricultural development program in a region. Each region (sub district and village) has different resource potential specifications so that the implementation of the program must adjust to the availability and dynamics of available resource potential.

The implementation of sustainable agricultural development in an area needs to be initiated by identifying the potential of available resources carefully and taking a close look at what already exists among the community. The potential of human resources and socio-cultural and inaction that need to be examined in detail because this factor will move the work activities to obtain the expected results. Furthermore, identify what they have and can be used to support the implementation of agricultural development so that agricultural development programs must grow from the bottom (each farmer family) to achieve the independence of farmers both individually and collectively.

Sustainable agriculture with low inputs (LEISA) sustainable agriculture with low inputs (LEISA) refers to forms of Agriculture that optimize natural resources adapted to agricultural systems by utilizing animals, soil, water, and climate for activities with the greatest effect [46]. The principle adopted in sustainable agricultural development is not only to provide assistance but also to motivate farmers or other users to be able to be independent and advance in farm management into a business entity that grows and develops sustainably. Through sustainable agricultural development through a sustainable agribusiness approach, several benefits will be obtained, namely:

- a. The development of agribusiness based on locally renewable natural resources always keeps the quality of these resources available or never runs out in meeting human needs from generation to generation.
- b. Agribusiness activities that utilize site-specific agricultural technologies by focusing on natural recycling processes will prevent agribusiness from improving the quality of its interactions with the environment in a sustainable manner.
- c. Agribusiness activities are very flexible and integrated with each stage of development, both as a source of local, regional, and national economic growth.
- d. Sustainable agribusiness activities will be able to produce competitive agricultural products to better ensure the consistency and continuity of farmers' income while ensuring consumer needs according to standards and product quality are more guaranteed.
- e. Agricultural development carried out with a sustainable agribusiness approach will provide job creation opportunities and increase income and added value proportionally among agribusiness actors.

## 4 Conclusion

Sustainable agricultural development supported by a combination of site-specific agricultural technology packages is very relevant to realizing sustainable agricultural development in North Sulawesi. On farm activities are carried out with an agricultural system approach in the form of crop rotation, utilization of organic matter, application of conservation techniques and chemical input reduction (LISA), integrated pest and disease control, and integration with livestock businesses. In other subsystems such as agroindustry, responsible waste treatment is carried out through recycling activities.

The phenomenon of unsustainable agricultural development is characterized by low exchange rates of primary products, inheritance system of land ownership, site-specific agricultural technology packages that are not yet available, low entrepreneurial behavior of the main actors and supporting actors, low levels of economic and social institutions of farming communities that have not been/have not been built, and coordination and commitment of agricultural scope institutions that are still low.

Sustainable agricultural development through agribusiness approach expects the availability of local natural resources in a sustainable manner, agribusiness actors gradually improve the quality of their interaction with the environment, the flexibility of agribusiness activities to economic growth, in general can produce competitive products can ensure the continuity and consistency of farmers' income and consumer needs and can create jobs and income (added value) proportionally for agribusiness actors.

The understanding of sustainable agriculture system to all agribusiness actors must be improved through socialization, discussion, written information in the form of leaflets, technical guides, and joint practices. The provision of knowledge to all agricultural apparatus related to agribusiness development and sustainable agriculture needs to be continuously improved.

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