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DEVELOPING AGRICULTURE IN SOC TRANG PROVINCE IN THE SUSTAINABLE DIRECTION

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LIST OF PUBLISHED ARTICLES

1. Trinh Van Thom (2012*), Solutions for aquaculture development in Soc Trang Province.* Journal of Sciences of Hanoi National University of Education, Vol.57, pp. 146 – 152.
2. Trinh Van Thom, Trinh Duy Oanh (2013), *Some solutions in sustainable development of rice growing in Soc Trang Province*. Journal of Sciences of Sai Gon University, Vol. 13, pp.27 - 32.
3. Trinh Van Thom and many authours (2013), *Local geography in Soc Trang Province.* Vietnam Education Publishing House Limited Company.
4. Trịnh Văn Thơm (2013), *Developing Aquaculture in Soc Trang Province*. 14th – 15th November (2013), Faculty Humanities and Social Sciences, Khon Kaen University, Thailand, p.130.
5. Trinh Van Thom (2015), *Evaluating the resources influnecing the development and distribution of agriculture*. Journal of Sciences of Dong Thap University, Vol 17, pp. 55 – 59.

INTRODUCTION

1. Rationale for the study

Agriculture (in the board sense) is the oldest material production, provides food for human, and plays an irreplaceable important role in the socio – economic life of mankind . To this day, there is no modern industry can replace agricultural production.

Vietnam is an agricultural country with 66,1% of the population living in the rural areas, 44,0% of labors working in Agriculture - Forestry and Fishery, contributing 18,9% of GDP (excluding product taxes) in the economy in 2015 [95]. Therefore, agricultural development has an important meaning in term of polity, economy, society and environment. In the process of industrialization and modernization , agricultural role is not reduced, on the contrary, agriculture, farmers, and rural areas are more and more be concerned and becomes an important link in "tam nong" policy in our country. Resolution of the Eleventh National Party Congress (2011) confirms: *"Promoting the industrialization and modernization of agriculture and rural areas, resolving the problems of agriculture, rural areas and farmers, creating strong changes in agriculture and rural areas, and improving people's living standards"* [111]. In the present and future, agriculture, farmers,and rural areas have a special important strategic position. Agriculture and rural areas are the pedestals when other industries face difficulties, and are affacted by external factors.

However, the development of Vietnamese agriculture also has many problems to be solved. Producing agriculture is mostly selling material, raw exports, and lack of trademark making value - added low. Transforming agriculture from quantitative growth to low-quality growth, developing unsustainably in the economy, society, and environment, and being influenced by climate change.

As a purely agricultural province, in 2015 Soc Trang has 69.4% of the population living in rural areas, 66.7% of working in Agriculture – Forestry and Fishery, and contributes 45,1% of GRDP in the whole province [24]. This is the mainstream economy of Soc Trang. Located in the Mekong Delta, fertile alluvial, interlaced rivers, ... Soc Trang has many conditions to develop a diverse agriculture, produce goods with high efficiency. In facts, the agricultural sector has made great strides and has increasingly confirmed the important role in socio-economic development of the province. In 2015, the value of agricultural, forestry and fishery production in Soc Trang stands at 6/13 provinces in the Mekong Delta and 9/63 provinces and cities nationwide[17]. However, agricultural growth and sustainable development are not always the same. The growth rate of agricultural production value is always high while the living standard of the farmers is still lower than that of the whole province. Prices of other products rise sharply while prices of rice, fruits, and food from agriculture fluctuate casually. Natural conditions are more favorable but are facing big difficulties in the impact of climate change and salinity intrusion, crop productivity is low. Agricultural land is quite large but produces fragmented and small… Those are the contradictions that are being raised during the development of agricultural production in Soc Trang Province.

From the developmental realities and the experiences of the advanced countries in the world have shown that sustainable agricultural development will bring about high efficiency. Therefore, the study ***"Developing Agriculture in Soc Trang Province in the sustainable direction"*** is rationale and has scientific and practical significance.

The topic addresses issues raised:

- Advantages and disadvantages of factors affecting the development of Agriculture – Forestry and Fishery in Soc Trang province.

- Developing Agriculture – Forestry and Fishery of Soc Trang Province in order to solve the relationship between the agricultural growth and development with the

protection of the ecological environment, dealing with climate change and salt intrusion; sustainable and effective development.

2. Aim and objectives

2.1. Aim

Applying theoretical and practical basises of agricultural development and sustainable agricultural development, the aim is analyzing the current situation of agricultural development in Soc Trang Province in a geographically sustainable manner. Thenceforth, recommending solutions to develop provincial agriculture in a sustainable direction in the future.

2.2. Objectives

- Overview selected theoretical and practical basis of agricultural development and sustainable agricultural development to apply in Soc Trang Province.
- Evaluating the factors influencing the agricultural development and distribution in Soc Trang Province.
- Analyzing the status of agricultural development in Soc Trang Province in the sustainable direction.
- Proposing solutions for sustainable and effective agricultural development in Soc Trang Province in the future.

3. Scope of study

Study content:

- Soc Trang agriculture studies in the board sense, including Agriculture and Fishery because of insignificant Forestry (occupying 0.5% of the value of production in the province in 2015; 65,1% of Agriculture, and 34,1% of Fishery).
- The thesis focuses on evaluating factors influencing the development and distribution of Agriculture and Fishery; the current status of agricultural development (including cultivation and rearing), fishery (exploitation and growing) and some forms of agricultural territorial organization (households, including large fields, farms, specialized areas (concentrated production and agricultural sub-regions).
- The thesis focuses on studying the case: Large fields of rice households and aquaculture households.
- On the basis of the status of agricultural development, the thesis evaluates achievements and constraints in the sustainable development of Soc Trang's agriculture (socio-economic-environment) in a geographical aspect in a qualitative manner.

Study space: Studies the whole territory of Soc Trang province, with the division into districts, towns, and cities with comparative attention to neighboring provinces and the whole Mekong Delta.

Study time: The data in the thesis focuses on the period 2005 - 2015, orients to 2030.

4. Study viewpoint and methodology

4.1. Study viewpoint

The thesis used 04 perspective including system perspective synthesize - territory, history - perspective and sustainable development.

4.2. Methodology

The thesis used some main methodologies: collecting, processing and generalizing data method; analyzing, comparing and generalizing method; sociological survey method; professional method; cartographic method and GIS; forecasting method.

5. Thesis contributions

- Inheriting, completing and clarifying theoretical and practical basis of agricultural development and agricultural development in the sustainable direction to apply in the study area.

- Clarifying the strengths and limitations of the factors affecting the development and distribution of agriculture in Soc Trang Province.

- Analyzing and evaluating achievements and limitations of the development of Soc Trang agriculture in the sustainable direction in the period 2005 – 2015 in agricultural production and aquaculture based on criterions selected and investigates the large fields of rice households and aquaculture households.

- Proposing solutions to develop Soc Trang agriculture in the sustainable direction until 2030.

6. Structure of the thesis

Topic *"Developing Agriculture in Soc Trang Province in the sustainable direction"* besides introduction and conclusion, references and appendix, the thesis content was presentd into 3 chapters:

Chapter 1. Scientific basises of agricultural development and sustainable agricultural development.

Chapter 2. Factors influencing and current status of developing agriculture development in Soc Trang Province in the sustainable direction.

Chapter 3. Orientations and solutions for developing agriculture in Soc Trang Province in the sustainable direction.

CHAPTER 1. SCIENTIFIC BASISES OF AGRICULTURAL DEVELOPMENT AND PROVINCE IN THE SUSTAINABLE DIRECTION

1.1. OVERVIEW OF AGRICULTURAL DEVELOPMENT AND PROVINCE IN THE SUSTAINABLE DIRECTION

1.1.1. In the world

Sector 1 (Agriculture – Forestry and Fishery) appeared earliest in human history. So far, it continues to play an important role in production, life and political security … Thus, the study of this field in the world has different aspects such as the agricultural economy, agricultural engineering, agricultural organization and management, agricultural geography.

About developing agriculture, Todaso (1990) divided into three stages from low to high, each with its own characteristics and different production methods. Stage 1, agricultural production is self – sufficiency, soil and labor are the two most important factors, agricultural production depends on nature. Stage 2, agriculture is moving in the direction of deversification, market – oriented production. Stage 3, which is the highest stage of development, funds and technology are decisive factors to develop and increase agricultural production.

1.1.2. In Vietnam

In Viet Nam, until now (2015), agriculture has played an important role, attracting 44.0% of working population, 18.9% of GDP [95] and contributing significantly to the country's export turnover. In the documents of the Communist Party, the Government's socio – economic development strategy and the symposium of the Central Executive Committee focus on agriculture, rural areas, restructure the agriculture in the direction of increasing value – added and sustainable development. Agriculture and aspects of sustainable agricultural development have been mentioned in many studies.

1.1.3. In Soc Trang

The study of agriculture in Soc Trang has not much, including "Geography in Soc Trang" [77] belongs to the Provincial Party Committee, Soc Trang Province People's Committee has analyzed quite specifically about the geography and economy of Soc Trang Province in recent years. It is characterized by an agro-industrial province, of which Agriculture - Forestry and Fishery occupies the highest proportion. Thus, agricultural production has always paid attention and reflected in Reports, Plants, Projects,…of the Provincial Party Committee, the People's Committee, the Department of agriculture and rural development in Soc Trang Province,..

However, so far, many theoretical and practical issues need to be further clarified such as climate change, science and technology, etc., which affect the sustainable development of agriculture.. In the province, there is no project to study agricultural development in the sustainable direction. Starting from the practical requirements and inheriting the study achievemnets of the old scientists in studying agriculture in geographical aspects, topic "Agricultural development in Soc Trang Province in the sustainable direction" will study objective agriculture, science, agricultural development's achievement and propose some solutions to develop agriculture in the sustainale direction.

1.2. THEORETICAL BASIS

1.2.1. Agricultural development

1.2.1.1. The concepts

The conceps of agriculture; Ecological agriculture; Commodity agriculture; The concepts of agricultural development; The concepts of structure and transfer agricultural structure; restructure agricultural structure.

1.2.1.2. The role of agriculture in the economy

Agriculture is the largest physical production of human society. Since its inception so far, agriculture has played an important role not only in deciding on human life, but also as a basis for national economic development. On the basis of the development of agriculture, the industry, transportation and other economic sectors have developed steadily, have accumulated, increased the national income and improve the social life, the role of agriculture is shown in the following points:

- *Agriculture is the main material production sector providing food for the basic needs of human*
- *Agriculture plays an important role in providing material for industry*
- *Agriculture and rural areas are the large markets consuming agricultural, industrial and service goods*
- *Agriculture provides a large volume of goods for exporting, and brings foreign currency to the country*
- *Agriculture is an area that provides labor for industry and other sectors of society*
- *Agriculture is directly involved in the maintenance of ecological balance, protection of natural resources and the environment, security and defense.*

1.2.1.3. Factors affecting the agricultural development and distribution

a. Geographical location

Geographic location is an important factor influencing agricultural production. This importance is expressed with a number of natural factors (soil, climate, etc.), geographic location determines the presence or absence, favorable or difficult activities of agricultural production. Countries located in tropical regions**,** near the sea with abundant sunshine will be favorable for rice cultivation**,** while tropical countries deep

in the continent have little rainfall, creating a semi-arid desert zone, losing their ability to develop a wet - rice agriculture.

The geographical location associated with the presence of natural resources (terrain, soil, climate, water, organisms ...), regulating the presence of agricultural activities, affecting the conditions of population and labor; history of formation, experience ... in the development of agricultural products, agricultural commodity markets, consumer markets. The geographical location of the territory with the sea and the countries in the region and in a certain natural zone will affect production direction, the exchange and division of labor in agriculture.

b. Natural conditions and natural resources

Natural conditions and natural resources are basic premise for the development and distribution of agriculture. Each kind of plant and animal can only live, develop and give products in certain natural circumstances. The result of the world's agricultural zoning depends on natural zoning. The existence of agriculture is associated with the characteristics of each natural zone. Consequently, the analysis of natural differences is a necessary step in assessing the state of agricultural development and distribution.

- *Topography and soil*
- *Climate and source of water*
- *Creature*

c. Socio-economic

Socio-economic factors have a decisive influence on the development and distribution of agriculture, about population, labor, science and technology, ownership relations and agricultural policy, fund and consumer markets…

- *Population and labor*
- *Science and technology*
- *Infastructure and facility*
- *Agricultural development policy*
- *Investment funds*
- *Consumtion market*

1.2.1.4. Forms of agricultural territorial organization applied in the province

There are various forms of agricultural territorial organization with different characteristics. In the thesis, NCS focuses on the forms of agricultural territorial organization commonly applied in the province.

Household (farm household); Farm; Areas of specialized farming and concentrated production; Agricultural subregion.

1.2.1.5. Indicators of agricultural development applied in Soc Trang Province

a. Common indicators

- GRDP of the agriculture (in the broad sense) and density of the agricultural GRDP structure:

This indicator reflects the position of the Agriculture - Forestry and Fishery sector in the Province's GRDP structure, which is a measure of the evaluate of economic development. The current trend of shifting GDP and GRDP is to gradually reduce the proportion of Agriculture – Forestry and Fishery, but the scale of production value is constantly increasing thanks to the application of scientific and technological advances to production, improving productivity, value and quality of products. GRDP of Agriculture – Forestry and Fishery and its density in GRDP have published annually in the national and provincial Statistical Yearbook.

- *Increasing the pace of GRDP growth of Agriculture – Forestry and Fishery* is an important indicator of the level of development and efficiency of agro-forestry-fishery production: reflecting the level of industrialization and modernization; the application of science and technology in production. Growth rate is the percentage of agricultural, forestry and fishery GRDP of the year comparing the growth rate over the previous year or against the base year (from 2010 in Vietnam calculating the growth rate at comparative prices in 2010). This indicator is published annually in the national and provincial Statistical Yearbook.

- The production value and the structure of agricultural, forestry and fishery production value are the aggregate indicators reflecting the results of production and business activities of the Agriculture - Forestry and Fishery, creating in the form of material products and services in certain time, usually one year. Agriculture - Forestry and Fishery production value is calculated by adding the production value of Agriculture - Forestry and Fishery corresponding to the two prices in each period of study [24], [95].

The value of agricultural, forestry and fishery production is the basis for calculating the growth rate, economic efficiency, economic structure and position of each sector as well as Agriculture - Forestry and Fishery. The indicators of agro-forestry -fishery production value is calculated at current prices and comparative prices (2010).

- Product value per hectare of agricultural soil

The productive value per hectare of agricultural soil (or soil use efficiency) is calculated by the production value of agriculture, forestry and fishery per agricultural soil (Unit: Million VND / ha). This is an indicator reflecting the efficiency of agro-forestry-fishery production, the ability to increase productivity, application of science and technology, soil improvement ... [24].

Agricultural soil includes agricultural development soil, forest soil and water surface for aquaculture. For each sub-sector, the national and provincial statistics are more specific [24], [95].

+ Product value per hectare of farmland

+ Product value per hectare of aquaculture water surface

b. Specific indicators of large field surveys and shrimp households

Specific indicators are applied to calculate the current status of agricultural development and conduct survey of NCS in Soc Trang Province in the current agricultural development, the organization of large field production for rice, intensive and semi-intensive shrimp farming is considered as the "bright spot" of the province**.** To apply to the assessment of economic efficiency of large fields and, intensive and semi-intensive shrimp farming the author develops questionnaire with the following criteria.

- *For large fields in My Xuyen district and Long Phu district*

- *For shrimp farmers in My Xuyen district and Vinh Chau town*

1.2.2. Sustainable agricultural development

1.2.2.1. The concept

1.2.2.2. Characteristics of sustainable agricultural development

a. Ensuring stable and efficient growth

b. Solving social issues in agriculture and rural areas.

c. Sustainable agricultural development towards ecological agriculture

CHAPTER 2. FACTORS INFLUENCING AND CURRENT STATUS OF DEVELOPING AGRICULTURE IN SOC TRANG PROVINCE IN THE SUSTAINABLE DIRECTION

2.1. FACTORS INFLUENCING OF DEVELOPING AGRICULTURE IN SOC TRANG PROVINCE

BẢN ĐỒ 2.3. CÁC NHÂN TỐ KINH TẾ - XÃ HỘI ẢNH HƯỞNG ĐẾN PHÁT TRIỂN NÔNG NGHIỆP TỈNH SÓC TRĂNG

Nguồn: Niên giám thống kê tỉnh Sóc Trăng năm 2005 và 2015

Người thành lập: NCS Trịnh Văn Thơm, 2018

2.1.1. Location and territory

a. Location

b. Territory

2.1.2. Factors of nature

2.1.2.1. Topography

2.1.2.2. Soil

a. Soil groups

b. The situation of using soil

2.1.2.3. Climate

2.1.2.4. Source of water and hydrography

a. Source of water

b. Hydrography

2.1.2.5. Creature

2.1.2.6. Marine resources

2.1.3. Factors of social economy

2.1.3.1. Population and labor

a. Population

Table 2.1. Population size and population by urban and rural areas in Soc Trang Province in the period 2005 – 2015

Target	2005	2010	2015
Population *(thousand people)*	1.258,6	1.295,6	1.310,7
+ Rural population	1.021,9	1.004,5	909,6
% of total population	81,2	77,5	69,4
+ Urban population	236,7	291,1	401,1
% of total population	18,8	22,5	30,6

Soc Trang population increases slowly. In the period of 2005-2015, the population increased by 52.1 thousand people and the average increase of 5.21 thousand people per year. The natural increase rate tended to decrease, from 1.34% in 2005 to 0.81% in 2015, the average for the whole period was 1.03%, lower than the national average in the period from 2005 to 2015 (1.1%) but higher than the Mekong Delta (0,91%). Soc Trang Province, as well as 12 provinces and cities of the Mekong Delta, are out-migration areas (negative net migration rates), so the rate of population growth is lower than the natural increase rate (net migration rate - 0.64% per year and the average annual population growth rate is 0.37% [95]. This proves that the economy has not really developed and livelihoods are still difficult. Therefore, economic development, including agriculture, is of great significance for solving employment, increasing income and limiting the migration.

The rural population of the province has decreased from 81.2% to 69.4% in 2015 but still occupies a high proportion of the population (higher than the national average of 65.5% in 2015)**,** but lower than the Mekong Delta average (75.0%) [95]. On the one hand, it facilitates the diversification and production of commodity agriculture and also exerts pressure on the production itself.

The population of Soc Trang province is unevenly distributed, most concentrated in Soc Trang City (1814 persons/km^2, 4.6 times higher than the provincial average in 2015, 7.5 times higher than in Cu Lao Dung district where has the lowest population density of provinces). Districts and towns along national highways, provincial roads, rivers and canals, are less saline and flooded with higher concentration of population (Ke Sach, Chau Thanh, Long Phu,…).

In Soc Trang province, there are 3 ethnic groups living together with different customs, cultural life, production activities but bearing bold rice culture of the Mekong Delta.

Picture 2.1. The chart of population size and national structure in Soc Trang Province in the period 2005 - 2015

Kinh people present in all districts, towns and cities of Soc Trang Province but most in Ke Sach, My Xuyen, Soc Trang city, My Tu and Long Phu. Khmer people concentrate in Vinh Chau town (21.8% of Khmer in the whole province), Tran De district (16.4%), My Xuyen district (13.0%), Chau Thanh district (12.1% %). Chinese people are in Vinh Chau (44.8% of the whole province), Soc Trang (26.6%) ... The Khmer, Kinh, and Chinese people who have explored the Mekong Delt 300 years ago, have been strongest since the beginning of the 19th century with their hard-working and intelligent, ethnic community combined of nature and two core elements of water, land and labor talent, creativity has made a rich agriculture, product diversity based on the experience of production of each nation.

b. Labor force

In 2015, the labor force aged 15 and older has 704.1 thousand people, occupying 53.7% of the population, about 684.1 thousand people working in economic sectors, occupying 97.1 % of labor force and 52.2% of population. The structure of labor is working according to economic sectors, according to urban, rural and economic sectors in positive moving.

Table 2.2. Labor force, labor and labor structure working by industry, city and countryside in Soc Trang Province in the period 2005 - 2015

Indicator	2005	2010	2015
1. Labor force *(thousand people)*	678,9	765,0	704,1
2. Working labor *(thousand people)*	659,5	743,3	684,1
- Economy *(%)*	100,0	100,0	100,0
+ Agriculture – Forestry and Fishery	77,7	65,1	60,3
+ Industry – construction	5,5	10,6	15,0
+ Service	16,8	24,3	24,7
- City and Countryside*(%)*	100,0	100,0	100,0
+ City	17,1	18,7	33,0
+ Countryside	82,9	81,3	67,0
- Rate of trained workforce*(%)*	5,0	5,7	9,9
+ City	17,0	19,3	15,8
+ Countryside	2,0	3,0	7,0

Thus, labors in the Agriculture – Forestry and Fishery are still dominant, although they have fallen sharply (down 17.4% in 10 years) and focus mainly in rural

areas. The rate of trained labors in the province is very low. In 2015, it was only 9.9%, lower than the average of the Mekong Delta (11.4%) and the country (19.9%) [95]. These are also challenges in agricultural development in the sustainable direction with high productivity and efficiency, especially in the Khmer community.

2.1.3.2. Infrastructure and facility

2.1.3.3. Investment fund

Investment fund is one of the constituent factors of agricultural production**.** For Soc Trang, fund contributes significantly to the process of industrialization and modernization of agriculture and rural areas. In the period 2005 - 2015, the investment fund for economic development in the province increased continuously.

Table 2.3. Investment fund in the area at current prices by economic sector in Soc Trang Province in the period 2005 - 2015

Indicator	2005		2010		2015	
	Billion dong	*%*	*Billion dong*	*%*	*Billion dong*	*%*
Total *(billion dong)*	2347,1	100,0	5063,0	100,0	7.699,3	100,0
Dividing *(%)*						
+ Agriculture – Forestry and Fishery	547,8	23,4	574,7	11,4	1.439,4	18,8
+ Industry – Construction	358,6	15,3	995,5	19,7	1.491,8	19,5
+ Service	1434,6	61,3	3493,1	68,9	4.718,1	61,7

As an agricultural province, the investment fund for this area compared to the low demand, despite the continuous increase, the average annual is 10.5%, but compared to the investment funds of three groups in the period 2005 - 2015 only 17.9% and not stable. Investment in agriculture from 23.4% of total investment in 2005, until 2010 decreased to 11.4% and increased again to 18.8% while contributing to 44.6% of GRDP of the province. [24]**.** To ensure sustainable agricultural development Soc Trang needs to increase the mobilization of investment funds in different forms (central and local budget, FDI and source of funding from international organizations, capital credit investment, from economic sectors ...).

2.1.3.4. Consumer market

- *Domestic market*: The population of Vietnam in 2015 is 91.7 million people, in 2017 reached 93.7 million people (the national population increased by 1.0 million people a year). Southern population (including the South East and Mekong Delta) occupies 36.7% of the total population, with 33,680.1 thousand people. [95] The demand for rice, vegetables, meat, fruit and seafood is increasing. Located in the Mekong Delta, the largest rice producer in the country, Soc Trang has its own advantages of good quality rice, "Soc Trang fragrant rice" certified by the Department of Intellectual Property. Aquaculture products (farming and processing) such as prawn, white shrimp, pangasius catfish... are the strength of the province. Vegetables, especially shallots, fruits (bananas, citrus, longan, pomelo) of Soc Trang have two major economic zones and HCMC with high demand (70kg/person/year). Meat (beef, pork, poultry) is guaranteed for domestic consumption due to the increasing demand for food (34kg/meat/person/year) and 80 eggs/person/year at present and for the processing industry.

- *Export market*: The agricultural products of the province in particular and the Mekong Delta in general (rice, seafood, vegetables ...) have favorable opportunities for the food shortage in the world. The problem is the competitiveness of products (quality, price, biosafety ...) to the market.

2.1.3.5. Science and technology

2.1.3.6. Agricultural development policy

2.1.4. General evaluation

2.1.4.1. Advantages

Soc Trang has many advantages in geographic location, natural conditions and natural resources as well as socio-economic development for a modern comprehensive agriculture in the direction of commodity production.

- The diversified natural resources, especially the land, climate and water resources, are favorable for comprehensive agricultural production and the construction of specialized production areas with high productivity, quality and competitiveness.

+ Large agricultural land, the rate of agricultural land compared with the total natural area is high (occupying 84.8%, of which agricultural land is 64.4%), aquaculture land is 17.2%, the rest 3.2% is forest land and other land. There is a high level of agricultural land per capita, there are many land groups (5 groups) with 14 types of land, in which saline soils (52.92%) and aluminous soil (23.56%) are the basis for diversifying plant structure (rice, legumes, annual industrial crops, fruit trees), protective forests and environmental protection.

+ The climate is moderate, surface water is abundant, many places have fresh water from 9 to 11 months or less flooded yearly, which is a prerequisite for the development of multi-cultivated agriculture, sustainable and competitive aquaculture. The population is quite crowded with 3 ethnic groups: Kinh, Khmer, and Chinese are living together, having customs and traditions of each ethnic group making up cultural life, diversified production experience, and combining water resources, soil and climate with the ability to work and creativity for economic development, especially agricultural production.

- Infrastructure and facility have been gradually improved, built and completed to meet the basic requirements for agricultural production. The advances in science and technology applied to production, especially in rice varieties, irrigation, rice cultivation and shrimp farming with policies, decrees and projects for agricultural development are promulgated in a timely manner.

This is an important premise for the development of competitive commodity agriculture.

2.1.4.2. Disavantages and limit

The rate of agricultural land on the total natural area is high, but mainly in aluminuos soil (23.6%) and saline soils (52.9%), some areas are flooded with deep and difficult floods drainage, which makes it difficult to increase crops and diversify crops.

- At the end of the fresh water source, Soc Trang still lacks fresh water in the dry season. Therefore, agricultural production is heavily dependent on rainwater.

- The phenomenon of climate change, saline intrusion has been complicated in recent times causing many disadvantages to agricultural production.

- The percentage of trained workers is low, especially the Khmer (30.7% of the population).

- Soc Trang is quite far away from major agricultural markets such as Ho Chi Minh City, Dong Nai, Ba Ria - Vung Tau, Binh Duong, so the cost of transportation is high, calling for domestic and international investment in development production facing obstacles. On the other hand, the market of agricultural and aquatic products is not stable, the trend of globalization also poses great challenges in economic development in general and agriculture in particular.

- Soc Trang is a poor province, so the infrastructure is lacking, the industry is not developed fast, technology is backward (except processing seafood), urbanization is slow, so the impact of these fields to influence agriculture - rural areas are very limited.

The advantages along with these difficulties and challenges are both the motive and the obstacles in the development of Soc Trang agriculture in particular and in the economic development of the province in general.

2.2. THE CURRENT STATUS OF DEVELOPING AGRICULTURE IN SOC TRANG PROVINCE IN THE SUSTAIABLE DIRECTION

BẢN ĐỒ 2.7. PHÁT TRIỂN VÀ PHÂN BỐ NGÀNH THUỶ SẢN TỈNH SÓC TRĂNG

Nguồn: Niên giám thống kê tỉnh Sóc Trăng năm 2005 và 2015

Người thành lập: NCS Trịnh Văn Thơm, 2018

2.2.1. Overview

2.2.1.1. The position of agriculture in the economy

2.2.1.2. Growth rate, scale and structure of agricultural production value

2.2.1.3. Product value per hectare of cultivated land and aquaculture

2.2.1.4. Status and changes in using agricultural land

2.2.2. Status of Agricultre – Forestry and Fishery development

2.2.2.1. Agriculture

a. Overview

b. Cultivation

With the advantages of soil, climate and water resources, Soc Trang has conditions to diversify crops, including food crops, vegetable crops, industrial crops, fruit trees and some crops. Other crops occupy the largest density with 77.7% of the agricultural production value in 2015.

c. Animal husbandry

In agricultural production in Soc Trang Province, the husbandry is important and closely related to the cultivation. The husbandry provides valuable food such as meat, milk, and eggs contributing to improving the material life of the people, while meeting the demand for traction, fertilizer supply for cultivation and product utilization of cultivation. However, the husbandry is still underdeveloped and unbalanced with the cultivation sector. The husbandry occupies a small density(16.3% of agricultural production in 2015). This affected the province's agricultural transition. So now and in the coming years, the husbandry of Soc Trang Province needs to be developed to reduce the disparity between the two sectors.

2.2.2.2. Fisheries

Located at the end of the Hau River valley with 72 km of coastline, Soc Trang Province has three major estuaries in the lower Mekong: Dinh An, Tran De, and My Thanh is a source of abundant alluvium and creatures along the coastal mangrove forest system, creating an alluvial area favorable to the development of aquatic products.

a. Aquaculture

b. Capturing fishery

2.2.3. Some forms of agricultural land organization in Soc Trang Province

2.2.3.1. Farmer households

2.2.3.2. Farm

2.2.3.3. Concentrated production areas

2.2.3.4. Sub-agricultural areas

2.2.4. Evaluation of the results of the agricultural development in the sustainable direction

2.2.4.1. Sustainable aspects

a. Economic sustainability

- The agricultural, forestry and fishery production of the province has maintained a high growth rate over the years and increased in all sectors, among them aquaculture is high increase (average of the period 2005 - 2015 was 11.9 %/year) and animal husbandry (8.9%/year), which can be considered as two sectors that promote growth and development of Agriculture - Forestry and Fishery. The sector has higher growth potential than other sectors in the near future.

- The structure of plants and animals changed according to the ecological region is quite clear, more and more effective production models and characteristics of each sub-region and each locality, associated with processing industry and consumer market

demand. The area of aquaculture increased sharply by 2005 and is now stable; The area of fruit trees has been increasing continuously, the area of rice and shrimp-rice has increased in recent years.

- The province has the ability to develop on a large scale, focusing on agricultural products with high competitive advantages such as seafood, rice, sugarcane - sugar, fruit, pork and poultry, followed by products for domestic demand such as corn, beans, beef, dairy cows ...

- It has formed concentrated production areas, initially has built infrastructure and processing facilities (rice, fishery, sugarcane - sugar ...), life of the people gradually improved, rural security in general and in ethnic minority areas in particular are relatively stable.

- Rice production has grown strongly, although the area of cultivation decreased, the weather is not favorable, the pests and diseases occur many places, but thanks to the increase of crops, emphasis on the use of new high yielding varieties, positive application of advanced cultivation techniques, the province's rice production has increased continuously, in 2015 reached over 2.25 million tons, up 0.63 million tons in 2000.

- The area of fruit trees increased by 1.98 times and the yield increased by 1.8 times, including some high value trees such as grapefruit, mango, durian, oranges rose rapidly in recent times and produced the volume of exports entering the export market has increased significantly.

- Despite many difficulties, the husbandry industry still maintained a high growth rate (8.9%/year), the basic diseases are controlled, ducks and chickens quickly recovered, raising pigs and chickens according to the industrial concentration method initially developed, the dairy cows are invested to develop, bring high income to farmers.

- Fishery increased rapidly in terms of area, output and export value. In 2015, the area raised only 1.6 times, but the output increased 8.1 times, including shrimp: area increased 1.3 times but output increased 3.6 times, yield increased by 2, 9 times, the value of seafood exports increased 2.23 times, agricultural products increased 1.56 times.

- Local people have been actively applying technical advances to improve quality, reduce production costs, increase competitiveness of agricultural commodities, increase income per unit of land and income of farmer households.

b. Social sustainability

- In Soc Trang, in general, farmers' perceptions of agricultural development policy, the application of science and technology and consumption markets - prices of products ... are relatively low leading to sustainable agricultural development in society is limited. Therefore, the role of agricultural production in the farmers plays a very important role. Because, if they are properly aware of the large role that agriculture plays in their livelihoods, the the issue of rural-urban migration will be limited or contribute to their implementation gender equality for women's participation in agricultural production is enormous.

- In order to improve production efficiency and increase income to help people eliminate hunger and reduce poverty. Firstly, proper attention should be paid to household awareness of agricultural production, including the following: knowledge of agricultural extension, knowledge of market of products to improve the results of agricultural production, reduce the rate of poor households and thereby contribute to agriculture in the sustainable direction. Techniques in cultivation and husbandry play an important role, deciding the development of agricultural production both micro and macro.

- Qualification and knowledge of workers also greatly affect the development of sustainable agricultural production in Soc Trang Province. The results of the survey in the study area showed that: Households with higher education levels are more likely to acquire knowledge and experience so they are better equipped to produce better technology and better quality, although land conditions may be bad more than poorly educated households (at primary level, even illiterate, especially in the Khmer minority). As a result, strengthening the training and improving the level of knowledge for farmers will contribute to the sustainable development of agricultural production in the province.

Recognizing the importance of sustainable social development in agriculture, the province has achieved some important results as follows:

+ Vocational training and job creation: vocational training, vocational guidance, employment counseling, employment promotion, employment assistance for people of working age, student loan , poor students, deploying labor export programs supported actively by banks and funds in the province.. In the period of 2005 - 2010, on average annually organize training and job training for 20 - 21 thousand laborers, create new jobs for over 20 thousand laborers, reduce unemployment in 5 years in urban areas from 6.18% to 4%, increasing the rate of using working time in rural areas from 81% to 85%, increasing the rate of trained labor from 12.5% to 30%, including the number of trained workers increased from 10.2% to 26.8%.

+ Poverty Reduction and Social Security: The poverty reduction program has been implemented in combination with national targeted programs and new agricultural and rural development programs and social welfare of the province such as vocational training , loans for production support, land allocation for poor households to produce, investment in essential infrastructure for communes with special difficulties, communes with ethnic minorities. The result has been a strong shift in poverty reduction. In five years, the rate of poor households has been reduced from 28.5% to 9.2% (2010: 24.3%). Khmer fell from 41.7% to 24.9% (2010: 36.8%).

+Implementing the social security policy, especially for the Khmer ethnic minority areas, in the period 2005-2010, apart from the implementation of social policies with disadvantaged people, the province coordinated and integrated funds from other programs to invest in infrastructure, support the life of the Khmer: the project provides electricity to households that have no electricity, clean water and environmental sanitation program for Khmer people, support to build 38,688 houses for Khmer people, provide residential land for 1,393 converted households, buy farm equipment for 3,895 households.

c. Environmental sustainability

- Awareness of farm households in using pesticides

Sustainable agriculture needs to pay attention to human health, sourse of water and environment. The status shows that in the process of agricultural production of the household in the province still use most pesticides such as pesticides, disease and grass. According to the survey in the study areas, the number of households using pesticide has no guidance and no knowledge about the toxicity of it is the majority, especially farmers who do not participate in large fields. In addition, there are farmers themselves increase the amount of pesticide because the thought that such pests will be killed faster, more radical. Some people do not mix well and also use pesticide outside the list due to lack of knowledge about pesticides. The use of pesticides in contravention of regulations will reduce the ability of agricultural production, affect the environment, human health, affect household income as well as deterioration of product quality.

- Awareness of farm households in treating waste and environmental pollution

Rural environmental pollution is a major concern of Soc Trang Province. Livestock waste is ruining the rural environment. Status of environmental pollution in Soc Trang province is increasingly serious. The main reason is the awareness of waste treatment and environmental pollution of people is not high, people have no awareness and knowledge about environmental protection as well as the development of agricultural production. The production process of people produces an amount of waste from agricultural production, especially from the production process. Every year, a large amount of animal waste is discharged into the environment without treatment (especially aquaculture). Livestock waste will pollute the surface water, the air and smells badly and directly affects people's life, causing loss of rural landscapes, causing many dangerous infectious diseases. . Due to the lack of environmental awareness and the profitability of the production process, the farmers have polluted the environment and affected the life in the countryside.

From the practical viewpoint, the awareness of farmers about the environment in where they live is very poor. Farmers have treated livestock waste by constructing biogas tunnels, through fish ponds, in pits or cages and fertilizing them; Aquaculture farmers mostly improve post-harvest ponds (or reared aquatic animals) that are discharged directly into rivers, canals or temporary reservoirs in ponds and lakes and then seek to dispose of them.

Failure to follow up and improve the farmer's consciousness will affect the development of agricultural production in general and damage to the environment in particular.Now, there must be measures and solutions to raise the awareness of environmental protection of people, knowledge of animal waste treatment and production, contributing to environmental protection and sustainable agricultural development.

2.2.4.2. Unsustainable aspects

a. Disavantages

- The economic structure of Agriculture - Forestry and Fishery in the province has not been stable, the density of aquaculture is unstable and tends to decrease, the density of husbandry is still low, forestry occupies small density and descending direction.

- The infrastructure and facility are lacking and weak, the production level is still very large among the population and still low compared to the requirements of industrialization - modernization.

- The price of agricultural products on the market is still fluctuating, so not to promote high development advantages of the province, especially seafood export market in recent years.

- Not to create products of agricultural and aquatic products with advanced technical content in the province.

- The income of rural people has increased slowly; conditions for traveling, accommodation, study, entertainment and medical treatment are limited, especially for ethnic minority communes.

- The investment capacity of the province is limited, internal resources in the population is limited, attracting foreign investment, especially foreign investment is weak.

- Producing unstable industries in terms of productivity, quality and production efficiency, not active and safe in farming, especially salinity control and irrigation..

Cause

- Infrastructure for Agricultural - Forestry and Fishery production, first of all the irrigation system is not completely complete, incomprehensive and slow investment

and can not keep up with the requirements of production conversion.

- Although average land per capita is high, the production scale is still fragmented, mainly in the form of households, cooperative economy and slow-growing farm economy. The volume of commodities is scattered, The quality of many agricultural products is low, the price is high and the competitiveness is poor.

- The system of procurement, processing and consumption of agricultural products in the province is not closely linked with production, especially in terms of economic benefits, so it has not become a motive force for the provincial key products. develop.

- The investment fund from state budget is still limited, the ability to accumulate investment to expand production of farmers is limited, while linking investment from enterprises and capital support from the credit system, banks are not high in the province.

- The level of production expertise and skills, awareness of farmers' agricultural production is still limited, while the collective economy is slow to develop, the farm economy and enterprises have not promoted their role. The dynamics of the transformation of the agricultural, forestry and fishery production structure in the province.

- Climate change and rising sea make waterlogging and water drainage more difficult, droughts as well as other abnormal climatic factors tend to increase and are difficult to forecast accurately, changes in crop structure, epidemics in plants and cattle, and poultry have been more complicated; the erosion of river bank, canals are more serious.

Opportunity

- Domestic consumption market and export of key agricultural products in the province generally have many advantages, especially food and fisheries. Vietnam joined the WTO, FTAs, ASEAN, AEC and TPP...

- The labor force in the agricultural and rural areas of the province is quite abundant, if training and small production habits are changed will be advantage not small.

- The achievements of science and technology in agriculture in the country and in the world, especially in biotechnology, will become a factor in the breakthrough in productivity, quality and competitiveness of agricultural products. provincial key enterprises.

- Policies for agriculture and rural areas that are being strengthened by the Government, especially the policy on food security and responding to climate change are of great interest to the international community, it will be an opportunity for the province's agricultural - rural development is faster and more sustainable.

Challenge

- Agricultural land tends to decrease, including rice land, if not managed closely and have reasonable policies, it will affect the goal of food security and rice exports.

- The quality of goods, origin, technical barriers and competitive pressures will have a significant impact on the agricultural exports in the province.

- The level of knowledge and quality of human resources in agriculture and rural areas in the province is still limited compared to the requirements of developing large commodity agriculture.

-The study potential, scientific and technological level in agriculture in the Mekong Delta, Soc Trang Province is generally slow to develop, has not yet made a breakthrough to quickly transfer from small agriculture to large commodity production, high technology...

- Infrastructure to develop agricultural production and new rural construction in the province is more difficult than other provinces.

- Rainy floods, saline intrusion tend to be more complex and severe, difficult to predict accurately and require large control and response costs.

CHAPTER 3. ORIENTATIONS AND SOLUTIONS FOR DEVELOPING AGRICULTURE IN SOC TRANG PROVINCE IN THE SUSTAINABLE DIRECTION

3.1.THE BASIS OF ORIENTATIONS AND SOLUTIONS FOR DEVELOPING AGRICULTURE IN SOC TRANG PROVINCE IN THE SUSTAINABLE DIRECTION.

3.1.1. Strategy for agricultural development in the Mekong Delta.

The strategy for agricultural development in the Mekong Delta is mainly based on the documents promulgated by the Party and the State on socio-economic development and agricultural and rural development. The common agricultural development strategy of the Mekong Delta: "Intensive rice cultivation ensures solid national food security and exports; developing specialty rice and specialty fruit trees; to develop pigs and waterfowl; to strongly develop brackish and fresh water aquaculture into the largest aquaculture areas in the country; forestry maintains mangroves, scattered trees; to develop and restore traditional craft; to pay attention to long – term solutions, to adapt to the climate change" [15].

3.1.2. Economic Development Plan for the Mekong Delta

Economic development in the Mekong Delta must be in line with the national economic development strategy, the Government's programs and the ability to integrate and compete internationally. The economic development planning of the Mekong Delta has been promulgated by the Prime Minister "Decision No. 245 / QĐ-TTg, dated 12/02/2014 of the Prime Minister approving the overall socio-economic development of the Mekong River Delta key economic region up to 2020, orientation 2030".

3.1.3. Economic Development Plan for Soc Trang Province

The implementation of Soc Trang economic development planning has been carried out in line with the economic development strategy of the whole country and the master plan for economic development of the Mekong River Delta; to ensure the synchronism and uniformity with the plannings of sectors and domains [107]. The contents of economic development plan of Soc Trang Province : "To build Soc Trang into a province with a high-tech application agriculture, sustainable development associated with industry and service development, synchronous and modern infrastructure system, material and spiritual life of the people are constantly improved; to gradually catch up with the development process of the whole country; the national defense - strong security, social order and security are guaranteed".

3.1.4. Lessons learned from Soc Trang's agricultural development in a sustainable direction

- It is important to identify the position and the role of agriculture in economic development.
- Agricultural development must be in line with the law of the market economy, guidelines and policies must be derived from reality.
- To invest in training human resources for agriculture, focusing on the development of science and technology to increase productivity and quality of agricultural products.

3.2. VIEWPOINTS, OBJECTIVES AND ORIENTATIONS FOR AGRICULTURAL DEVELOPMENT IN SOC TRANG PROVINCE IN THE OF SUSTAINABLE DIRECTION

3.2.1. Viewpoints

3.2.2. Objectives

- *Common objectives*

The overall and long – term objectives of agricultural and rural development in Soc Trang Province are taking form a large-scale commodity-producing agriculture; To build a comprehensive rural area with a rational economic structure, proper production relations and development of infrastructure in modern direction with the province's general development orientations.

- *Specific objectives*

The growth rate of agricultural, forestry and fishery production in the period 2016-2020 will reach an average of 4.0-4.5% per year, including Agriculture is over 4.40%/year, Forestry is over 1.68%/year, and Fishery is over 4.73% / year; Agriculture occupies 56.21% (cultivation 60.0%, husbandry 30.0%, agricultural services 10.0%); forestry occupies 0.65%; aquatic products occupies 43.14%.

The rice output will reach about 2 million tons by 2020, including the specialty rice output will occupy over 40%. The total output of aqua-products is 348,500 tons, including shrimp production is over 100 thousand tons and sea-catching output is 76,000 tons.

3.2.3. Orientation

❖ *By industry*

The growth rate of production value (comparable prices in 2010) will be 4.50% in the period 2016-2020 and 2.82% in the period 2021-2030. GDP growth rate in 2016-2020 will reach 3.24 % and 1.89% in the period 2021-2030 [107].

- *Agriculture*
- *Fishery*

❖ *By territory*

Based on the map of the development and distribution of cultivation, the map of main land categories and the socio-economic development orientation in the province from now to 2020, the agricultural production area in Soc Trang Province is divided into 5 concentrated areas, namely:

Zone 1 (mangrove area); Zone II (brackish water area); Zone III (fresh water area is not affected by flood and alum); Zone IV (fresh water area is affected by flood and alum); Zone V (isle area).

3.3. SOLUTIONS

3.3.1. Common solutions

3.3.1.1. Planning and implementation of planning

Restructuring (reorganization) of agricultural production; Broadening the linking of local areas and 4 houses;Developing agriculture and farm firm

3.3.1.2. Science, technology and agricultural extension

Studying and transferring techinical advances into production; Dveloping high – tech agriculture; Mechanizing and developing technology after harvesting; Improving the efficiency of agricultural extension.

3.3.1.3. Solutions of market and product consumption

3.3.1.4. Solutions of human resourse trainning

3.3.1.5. Investment capital of agricultural and rural development

3.3.1.6. Responding to climate change and rising sea water

Constructive solutions; Nonconstructive solutions.

3.3.2. Solutions for each sector and key industry

3.3.2.1. For rice plant

Solutions of the large field construction; Restruturing rice production

3.3.2.2. Vegetables and shallot

3.3.2.3. Fruit tree

3.3.2.4. Husbandry

3.3.2.5. Fishery

3.3.3. Some recommendations

- Increasing investment capital to build infrastructure and technical facilities for agricultural and rural development in the direction of industrialization and modernization. Particular attention should be paid to the construction of irrigation systems with new development requirements, rural transport system, water supply and rural environmental sanitation.

- Supporting investment for implementation of key programs, and priority projects. Adopting preferential policies on credit capital for enterprises, owners of farms and large production households to invest in the field of warehouses, wharves, processing plants and purchase of commodity farm produce through consumption contracts.

- Banks create favorable conditions for farmers and enterprises to borrow capital sufficiently with the loan term suitable to the production cycle of each kind of product and enjoy preferential regimes according to current regulations.

- Management angencies and institutes are positively related in supporting agriculture and rural development as well as farmers to effectively implement priority programs and projects.

CONCLUSION

Agriculture is an important material production sector for the development of economic sectors in particular and the whole economy in general. The reality of agricultural production has increasingly proved its great role and significance for our socio-economic development. Agricultural production meets the number one human development needs of food, creating space and foundation for society. From that meaning, agriculture has an integrated effect on socio-economic life. Therefore, the study of developing agriculture in the sustainable direction in each area in the country is an urgent need to be concerned.

The Study of developing agriculture in the sustainable direction in Soc Trang province has a particularly important meaning. On the one hand, it can provide an overview of the current state of agricultural development and distribution. On the other hand, it can orient future agricultural development trends and find the most suitable solutions in sustainable direction. In the process of implementing the thesis, based on the research on the current status of agricultural development and distribution in Soc Trang Province, the author draws some conclusions:

- The structure of crops and livestock in Soc Trang Province has been changed according to ecological regions, which is quite obvious. There are many production models that are effective and suitable to the characteristics of each sub-region and each locality, associated with industrial processing and market demand consume. Aquaculture area increased sharply before 2005 and so far (2015) has been stable; the area of fruit trees increased continuously, the area of rice and shrimp - rice cultivation increased lately year.

- Soc Trang Province has formed concentrated production areas, initially built infrastructure and processing facilities (rice, aquatic products ...). Rice production thrives, although the area of cultivation decreases, weather is unfavorable, pests and diseases occur in many places, but thanks to the use of new high-yielding varieties, active application of techniques advanced cultivation. The province's rice production has increased continuously. In 2016, it reached 2.1 million tons and up 0.50 million tons in 2000. Fruit area increased by 1.98 times and output increased by 1.8 times. Animal husbandry still maintains a high growth rate of production value.

- Fishery increased rapidly in terms of area, output and export value. In 2016 compared to 2000, the farming area increased only 1.7 times but the output increased by 11.1 times. In shrimp area increased 1.4 times, but production increased 9.98 times, productivity increased 7.22 times, seafood export value increased 3.09 times, agricultural products increased 0.71 times.

- People have been actively applying technological advances to improve quality, reduce production costs, increase the competitiveness of commodity agricultural products, and improve income per unit of land and farm household income. Many scientific and technological advances have been applied to production, especially advances in varieties and techniques of rice and shrimp farming.

- The economic structure of Agriculture – Forestry, and Fishery of the province are not really sustainable, the proportion of the fishery sector is unstable and tends to decrease, the proportion of husbandry is still low, forestry accounts for a small proportion and has a tendency descending direction.

- It has not been able to create agricultural and aquatic products with the advanced technical content of the province. Income of rural people increased slowly; travel, accommodation, study, entertainment, and medical treatment conditions are

limited, especially for ethnic minority communes. The investment capacity of the province is limited, the internal resources of the people are still limited, the attraction of outside investment is especially weak in foreign investment.

- Investment capital from the state budget is still limited. The ability to accumulate investment to expand production of farmers is limited while linking investment from businesses and supporting capital from the credit system, banks in the province is not high.

-The production qualification, as well as the awareness of farmers' agricultural production, is still limited, while the collective economy is underdeveloped, the farm economy and enterprises have not promoted their driving force in the restructuring of Agricultural – Forestry, and Fishery production of the province.

- Climate change and rising sea levels make flooding and water drainage more difficult. Droughts, as well as other unusual climatic factors, tend to increase and make it difficult to accurately forecast and do changes in crop structure, diseases on crops and cattle and poultry are more complicated; erosion of rivers, and canals is increasing.