

**WORKS COMPLETED AT VIETNAM INSTITUTE FOR
DEVELOPMENT STRATEGIES**

Supervisors:

1. Prof. PhD. LE DU PHONG

2. Dr. KIM QUOC CHINH

Feedback 1:

Feedback 2:

Feedback 3:

**The thesis will be defended before The Thesis Evaluation Committee at
Vietnam Institute for Development Strategies**

At:,/...../2020

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INTRODUCTION

1. Rationale

Thanh Hoa has the population of about 3.7 million people, covering mountains, plains, coasts and seas and is subject to climate changes. Its mountainous regions makes up for 76.5% of natural area, 14% of agricultural land and its population accounts for 29.6% of the total population of the province but the development of agriculture is low and GDP per capital is equal to 35% compared to the average one of the province. It is of the essence to clarify how to develop agriculture in Thanh Hoa's mountainous regions effectively in the context of globalization and climate changes. Results of this research will be a useful source of references for central coastal provinces with the same condition as Thanh Hoa. Based on factors above, the author decides to choose the topic of doctoral thesis in economics, major of economic development as "Improving efficiency in agricultural development in mountainous areas of Thanh Hoa province.

2. Objectives and duties

2.1. Objectives

The objectives of the thesis are to propose orientations and solutions to develop and organize agricultural production in mountainous regions of Thanh Hoa until 2025 in the direction of efficiency improvement and sustainable development; simultaneously, provide more scientific basis for formulation of policies of economic and social development in general and in particular.

2.2. Duties

To complete the objectives aforementioned, the following duties are to be done:

(1). Clarify argumentative issues, form the basis of research; (2). Determine the positive and negative sides, causes of achievements as well as weakness during the process of agriculture *development* in mountainous regions of Thanh Hoa from 2011 to 2018 ; (3). Propose orientations of agriculture development and solutions to efficiency improvement of agriculture development in mountainous regions of Thanh Hoa until 2025.

3. Frame

The author makes a diagram of research to get reader easily understand.

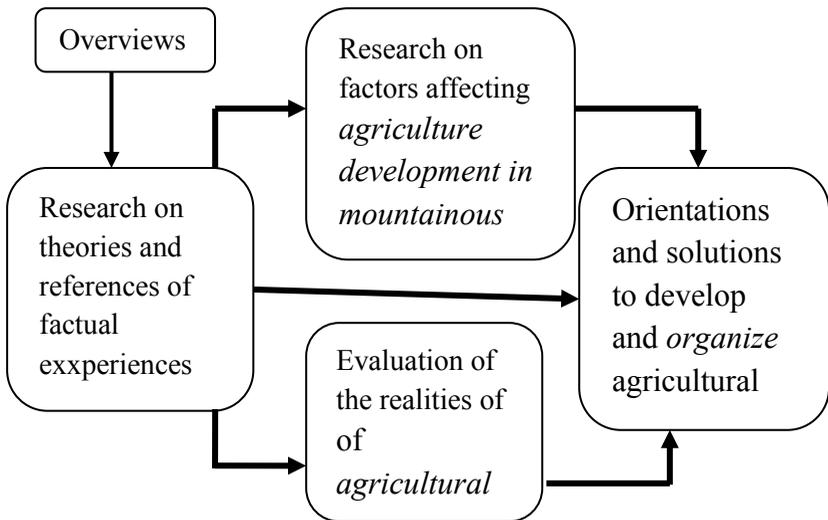


Figure 1: Research frame of the thesis

The frame of research indicates that it is important to research theories and consult experiences to improve efficiency of agriculture development in mountainous regions. After clarifying the theoretical issues, it is necessary to research the factors affecting the efficiency of agriculture development and assess the efficiency of agriculture development in mountainous regions. The next step is to determine the direction of development of mountainous agriculture and find out solutions to improve the efficiency of agriculture development in mountainous areas of Thanh Hoa province by 2025.

4. Opinions, methods of approach and methods of research

4.1. Opinions

The author's opinions are based on the main points as follows: i). Conform to the dialectical materialism of Mac-Leninism, ii). Be aware of the viewpoint of efficient and sustainable development of the Party and the State, iii). Points of territorial aggregation.

4.2. Methods of approach

Research on the efficiency of agriculture development in Thanh Hoa's mountainous regions is a complicated issue, so the author approaches the issue in different ways: i). From theory to practices; ii). From a macroscopic scale to microscopic scale; iii). Interdisciplinary and inter-regional approach; and iv) Causes and effects.

4.3. Methods of research

The author combines the main methods as follows: system analysis, statistics, expert; comparison, forecast ; policy analysis; SWOT analysis; maps, tables and graphs and survey

5. New contributions

5.1. Theoretically and academically:

The research clarifies the contents and characteristics of mountainous agriculture in the context of socialist-oriented market economy development and in the context of globalization and climate changes; specifies the content and nature of efficient development of mountainous agriculture; factors affecting the efficiency of agriculture development in mountainous areas, determines the evaluation standards of the efficiency of agriculture development in the mountainous areas.

5.2. Practically:

The research provide the basis *for formulation* of policies of agriculture *development* in mountainous regions, proposes the solutions to efficiency improvement of agriculture development in mountainous regions of Thanh Hoa.

Volume 1

GENERALITIES OF CERTAIN SCIENTIFIC WORKS ON ARGRICULTURE DEVELOPMENT EFFICIENCY

Author has collected 99 works (including 87 domestic works and 12 foreign works) and concluded several generalities of the following basic issues:

- 1.1. Generalities of agriculture development in a Socialism-oriented market economy and globalization
- 1.2. Generalities of agriculture development efficiency
- 1.3. Generalities of elements affecting agriculture development efficiency

From the aforementioned results, the author has successfully drawn the important remarks:

(1). *Possible inherited points for the thesis research:* In general, scholars have mentioned agriculture development in the context of globalization as well as climate change. Nevertheless, one striking point the author might inherit is the idea of developing the production value chain and advanced forms of agricultural organization on the basis of linkage.

(2). *Points which require further research:* i), Agriculture development in a Socialism-oriented market economy, globalization and climate change; clear implications and improvement of agriculture development efficiency in mountainous areas; ii). Elements affecting agriculture development efficiency in mountainous areas; iii) Determination of a set of evaluation indicators to agriculture development efficiency in mountainous areas in Vietnam.

Volume 2

THEORETICAL BASIS OF IMPROVING AGRICULTURE DEVELOPMENT EFFICIENCY IN MOUNTAINOUS AREAS AND PRACTICAL EXPERIENCE

2.1. Theoretical basis

2.1.1. Mountain agriculture in a Socialism-oriented market economy and globalization

Agriculture development shall attach special importance to the market economy while at the same time pay due attention to the requirements regarding fairness and equality between farmers, industrialists, scientists, insurers, bankers and governmental benefits.

Another factor is state management which plays a crucial role in agriculture development.

2.1.2. Agriculture development efficiency in mountainous areas

a). Agriculture development efficiency in mountainous areas reflects its huge benefit in economy, social situation and environment during a certain period economic, social and environmental benefits gained in a certain period of time. All agricultural production and business practices do good not only to agricultural producers, processors and distributors but also to the state, the localities and consumers. Agriculture development efficiency in mountainous areas consists of the development in crop production, animal husbandry and agricultural services.

b). Improving agriculture development efficiency in mountainous areas: to increase the effectiveness of agriculture development whose internal content lies with the achievement of efficiency indicators associated with improving added value and reducing production costs with a view to bringing benefit to all involved as well as remaining environment-friendly.

2.1.3. Elements affecting agriculture development efficiency in mountainous areas

Including: (1). State and state management of agriculture in mountainous areas (State consists of central government and local governments); (2). Agricultural market; (3). Scientists, manufacturers and the related; (4). Agricultural production organizations; (5). Natural conditions; (6). Technical infrastructure.

2.1.4. Evaluation of agriculture development efficiency in mountainous areas

In order to evaluate agriculture development efficiency in mountainous areas, a set of quantitative indicators is required: (1).

Agriculture workforce productivity, (2). Productivity of 1 ha of agricultural land, (3). The proportion of value added in the total value of agricultural production, (4). Ratio of agricultural commodities, (5). Agricultural output value per farmer, (6). Proportion of poor farmers. To analyze causes of agriculture development efficiency in mountainous areas, according to the author, it is necessary to look into important issues as follows: a). Agricultural production structure, b). Investment for agriculture development, c). Agricultural production organization; d). Policies and measures implemented by local authorities; and đ). Agricultural technical infrastructure.

2.2. Practical experience in improving agriculture development efficiency in mountainous areas

Regarding agriculture development efficiency, it is imperative to improve the efficiency of land use, of crop structure, animal husbandry and agricultural production organization. Special attention shall be given to the relationship between agriculture and related fields. Technological elements and production organization are of also utmost importance. The state, local governments and businesses should promote their roles in agriculture development.

Volume 3

REALITY OF AGRICULTURE DEVELOPMENT EFFICIENCY IN MOUNTAINOUS AREAS OF THANH HOA PROVINCE DURING A PERIOD FROM 2011 TO 2018

3.1. General analysis of elements affecting agriculture development efficiency in mountainous areas of Thanh Hoa province

The thesis has clearly indicated the following issues: (1).The market is promising and within "positive" reach of mountainous areas of Thanh Hoa. The local market is quite large (with a population of about 3.8 to 4 million people), agricultural productions of Hanoi and China are respectively large; (2). Land, water and climate promote the development of various agricultural and forestry products with high volume and high economic value; (3). Commodities from the North to the South or backwards along Ho Chi Minh road running through the mountains of Thanh Hoa province benefits lot in the future for development plans; (4). The terrain is complex, the intellectual level of local people is still relatively low, technical infrastructure is either sufficient or well-qualified; The economy is underdeveloped, the weather is becoming more and more extreme, agricultural production is greatly affected by climate change.

3.2. Reality of agriculture development efficiency in mountainous areas of Thanh Hoa province

3.2.1. Generalities of the agriculture development situation in mountainous areas of Thanh Hoa province

a). Agriculture in mountainous areas of Thanh Hoa province has developed more progressively than that before 2010, yet certain potentials have not been effectively exploited. Growth rate of agricultural output has been recorded to be about 5.4-5.7%. Several effective production models have been discover based on the importation of plant seeds or animal breeds. Compared to its potential, however, the development has yet commensurate.

Table 3.5: Several targets of agriculture development in mountainous areas of Thanh Hoa province

Target	2010	2015	2018
1. Production value, VND billion, price 2010	2637	3478	5016
+ Main agricultural products	379	543	650
<i>% of total</i>	<i>14,4</i>	<i>15,6</i>	<i>16,1</i>
+ High-tech field	214	320	386
<i>% of total</i>	<i>8,1</i>	<i>9,2</i>	<i>9,6</i>
2. Added value, VND billion, price 2010	1139	1614	1884
<i>% of total production value</i>	<i>43,2</i>	<i>46,4</i>	<i>36,9</i>
Structure of Agriculture added value; %	100	100	100
In which:			
- Cultivation	70,5	66,9	61,8
- Animal husbandry	20,4	23,1	26,3
- Agricultural services	9,1	10,0	11,9

Source: Thanh Hoa Statistical Office.

b). Initial formation of certain concentrated production areas: The sugarcane area occupying 25 thousand hectares; areas for corn and soybean plantation of about 16-17 thousand ha; rubber planting area takes 16 thousand ha;...

3.2.2. Evaluation of agriculture development efficiency in mountainous areas of Thanh Hoa province

3.2.2.1. General remarks on agriculture development efficiency in mountainous areas of Thanh Hoa province

a). Achievements: Agriculture development efficiency in mountainous areas of Thanh Hoa province has increased slowly. The efficiency and workforce productivity are relatively low compared to the potential. Productivity of certain crops is merely close to the national average number and about 0.7 times as high as that of the

most productive places in other mountainous areas such as the Central Highlands and Northern mountainous regions. A number of newly-found agricultural products with high quality and productivity have attributed to a more efficient agriculture development.

b). Limitations: Development efficiency is both low and uneven among sub-regions, production added value is also limited. The rate of agricultural products remains shallow. What seems even worse, a large number of mountainous people have flocked to coastal areas or cities to make a living.

3.2.2.2. Specific remarks on agriculture development efficiency in mountainous areas of Thanh Hoa province

In general, performance indicators have improved little by little.

Table 3.8: Several key targets of agriculture development efficiency in mountainous areas of Thanh Hoa province

Target	2010	2015	2018
1. Added value/farmer, VND million	12,3	18,5	22,7
2. Agricultural workforce productivity (based on added value), VND million	12,4	18,2	24,8
3. Rate of agricultural commodities, % of production value	8,5	13,6	16,2
4. Added value/ha of agricultural land, VND million	11,6	14,7	18,8
5. Ratio of added value/production value, %	33,2	36,4	36,9
6. Growth rate of agricultural added value, %	4,4	4,2	4,4

Source: Thanh Hoa Statistical Office.

- Evaluate agriculture development efficiency of the whole mountainous region

Comparing 2018 with 2010, added value/person is 1.89 times higher; workforce productivity is double, the rate of commodities is

double and added value growth rate is 1.2 times higher. In 2018, comparing to the average of the whole province, added value/farmer is about 52% of the GRDP/person; agricultural workforce productivity is about 54% and production value/ha of new agricultural land is about 59%. The added value rate in the total value of production is about 36% (which is low). Although agriculture has provided jobs for about 67% of social labor, the rate of agricultural commodities rising from 8.5% in 2010 to 16.2% in 2018 is considerably low. Last but not least, the new export value is nearly 9% of the total agriculture added value but that only accounts for approximately 4.2% of the total agricultural production value of mountainous areas.

- Evaluate agriculture development efficiency by sub-region

Due to lacking in statistics, the author focused on analyzing the efficiency of the sub-region which helped find that the greater the altitude, the lower the effectiveness. Added value/ha in midland is 2.7 times higher than that of the high mountain sub-region and about 1.97 times higher than that of the low mountain region. On the face of it, efficiency improvement measures shall be taken in the sub-regions, especially in high and low mountain sub-areas in the upcoming years.

- Evaluate agriculture development efficiency by crop

Because of a shortage of statistics, the author could not calculate the effectiveness for all crops and livestock. The author then conducted survey in some typical households. The results have shown that the efficiency of rice stays the lowest, followed by the level of grapefruit and the highest ranks belong to that of melon and melon empess.

3.2.3. Reasons for achievements and limitations

3.2.3.1. Reasons for achievements

Provincial and district governments have so far paid due attention to agriculture development in mountainous areas of their province, taking certain initiatives for agriculture development. The provincial government has constructed traffic roads and power transmission lines from Thanh Hoa city to mountainous areas and from highlands to routes outside of the province. Local people have step by step adopted a proactive approach towards agricultural production. Agricultural market has increased sharply.

3.2.3.2. Reasons for limitations

Including: the use of agricultural land resources has not fully estimated the market demand and the impact of science and technology. Production by territory has yet been implemented in practice. Investment in agriculture development in mountainous areas remains inadequate and unsuitable which acts as the main reason why such potential of the region has not been promoted. Furthermore, state management of agriculture development in mountainous areas has revealed various shortcomings.

Volume 4

ORIENTATION AND METHODS OF IMPROVING AGRICULTURE DEVELOPMENT EFFICIENCY IN MOUNTAINOUS AREAS OF THANH HOA TO 2025

4.1. Orientation of agriculture development in mountainous areas of Thanh Hoa province to 2025

4.1.1. Orientation of social-economic development in general and of agriculture development in particular in mountainous areas

Globalization and the Fourth Industrial Revolution have brought tons of opportunities and challenges for agriculture development in mountainous areas of Thanh Hoa province.

The agricultural market of Thanh Hoa in general and of the mountainous areas of Thanh Hoa in particular are relatively large.

- For the domestic market: Demand for agricultural products in urban areas and economic zones of the province is quite high; Hanoi is also in great demand for agricultural products.

- For the foreign markets: there is a promising possibility. It is worth mentioning first markets of China, Russia, Eurasian customs union; followed by those of Japan, South Korea, EU, Singapore,... Meanwhile, other big markets for agricultural products of Thanh Hoa to join are typically the US and other ASEAN countries.

4.1.2. Agricultural market forecasts in mountainous areas of Thanh Hoa province

According to reports of the province, the development target of mountainous areas to 2025 revolves around an economic growth of about 7.5-8.5%/year and a reduction in the income gap between that of mountainous areas and other parts of the province. That requires a much more efficient and fast-growing agriculture in mountainous areas. By 2025, crop and livestock productivity is expected to increase by about 1.4-1.5 times higher than that in 2018 and agriculture development is predicted to be organized in a modern direction.

4.1.2.1. General development objectives of mountainous areas of Thanh Hoa province

According to the socio-economic development planning of the province to 2025 and vision to 2030: (1). Added value/person is 3.5 times higher; (2). Workforce productivity is 3.7-4 times higher; Rate of commodities is 3 times higher than those of the recent time.

4.1.2.2. Rising issues of mountainous areas of Thanh Hoa province

a). Comprehensive renovation, considering efficiency as the ultimate criterion for agriculture development in mountainous areas

b). Specifically define the objectives and directions of agriculture development in mountainous areas of Thanh Hoa province on the basis of promoting comparative advantages and opportunities from an era of globalization and industrial revolution.

Agricultural output shall be about 3 times higher than that of today. Implement the guideline: crucial crops and livestock must be more productive with at least 1.4-1.5 times higher than the current level.

Table 4.6: Forecast for agriculture added value in mountainous areas of Thanh Hoa province

Target	2018	2020	2025
1. Production value, VND billion, price 2010	5016	5790	7747
+ Main agricultural products	650	1013	2169
<i>% of total</i>	<i>16,1</i>	<i>17,5</i>	<i>28,0</i>
+ High-tech field	386	683	1740
<i>% of total</i>	<i>9,6</i>	<i>11,8</i>	<i>22,3</i>
2. Added value, VND billion, price 2010	1884	2229	4044
<i>% of total production value</i>	<i>36,9</i>	<i>38,5</i>	<i>52,2</i>
Structure of Agriculture added value; %	100	100	100
In which:			

- Cultivation	61,8	59,9	57,8
- Animal husbandry	26,3	27,7	29,2
- Agricultural services	11,9	12,4	13,0

Source: 2020, 2025 collected by the author

4.1.3. Development orientation of agricultural production structure in mountainous areas of Thanh Hoa province

Having showcased the viewpoint on objectives of agriculture development in the mountainous province of Thanh Hoa, the author would like to present the respective orientation as follows:

(1). Promote specialization in three sub-regions: high mountains, low mountains and midland

- For high mountains: Prioritize the development of maize, cassava, vegetables, specialty rice and cow, buffalo breeding.

- For low mountains: Prioritize the development of fruit trees, high-quality green vegetables, rice, maize, soybean and cow breeding (especially dairy cows), pigs, poultry and fish

- For midland: Prioritize the development of citrus fruit, melon, Hoang Hau, high quality green vegetables, sugarcane and cow, pig, poultry and fish farming.

(2). Adjust agricultural production structure by the route through discovering key agricultural products under the brand of mountainous regions of Thanh Hoa

Economic efficiency statistics and comparative advantages act as crucial factors in forming key products bearing geographical indications of Thanh Hoa province.

As efficiency and sustainability are two highest criteria, the author recommends the application of high technology in developing agricultural structure. Specialize by crop and animal in accordance with different potential and strength of each place. Minimize inefficient

plantations such as rubber and cassava; reduce the area of mixed and scattered orchards; increase the area of grass to raise high-quality dairy and beef cows; increase the area of high quality fruit trees.

(3). Modernize agriculture by seeking investors who opt for the promotion of large-volume and high-quality agricultural production. International economic groups with phenomenal financial and technological potential suitable for developing key agricultural products of mountainous areas should be undoubtedly taken into account. Methods to attract right investment should therefore be raised in order for mountainous areas of the province to modernize its agricultural production structure.

4.2. Solutions

Based on theoretical issues aforementioned in chapter 2, causes of achievements and limitations specified in chapter 3 and orientations to develop mountainous agriculture in part 4.1, the author reckons that all following solutions are required to be implemented together to improve the mountainous agriculture in Thanh Hoa effectively and sustainably.

4.2.1. Improving the efficiency of state management of mountainous agriculture

4.2.1.1. Co-operating with central government to promote the efficiency of state policies of agriculture development

+ The central government continues to improve policies of credit for agriculture in general and for mountainous areas in particular by specifying and supplementing the provisions of Decree 55/ ND-CP (June 9, 2015) on favorable credit for mountainous areas.

Policies of agriculture development must show the target of socialist-oriented market economy development. The government introduces a policy of consumption of national mountainous regions'

agriculture production. Simultaneously, it is necessary to make a plan to support the mountainous regions specifically and practically (budgets and produce consumption) to build new rural areas and facilitate farmer's integration into globalization. Moreover, the authority should invest money in projects of tourism development, more effective exploitation of Samson coastal urban center and promotion of Lam Kinh, Ho citadel, Cam Luong fish stream, ancient Vietnamese relics.

+ The government should improve the laws on development of mountainous areas of ethnic minorities. It is allowed for ethnics to enjoy the same regime as ethnic minorities in the Central Highlands and the Northwest. The government should make plans for training of managerial staff for mountainous regions. It is important to universalize and update the knowledge of state management and laws (at least policies for mountainous regions) and settle unemployment for mountainous regions.

4.2.1.2. Promote the role of the authorities

The provincial government needs to do the following tasks:

a). Checking the project for the development of mountainous regions in general and mountainous agriculture in particular.

+ Review socio-economic development planning, especially projects of farming and animal husbandry focusing on specialization and modernization in mountainous sub-regions.

Review combined agriculture and forestry planning in the direction of multi-modal integration (Forest-Pond-Barn; fruit tree; Forest Nursery - Fruit Tree ...) to improve the general efficiency of agriculture and forestry and meet the requirements of specialized forests development as well as sustainable development of agriculture and forestry in Thanh Hoa's mountainous regions.

+ Regarding general land use structures for mountainous regions, it is advisable to make land use plans in general in steads of letting the districts by themselves determine land use planning.

+ Advertising and trade promotion of agriculture produce by both traditional methods (posters, leaflets, etc.) and newly technological methods (websites, electronic exchanges, etc.) and organization of agricultural fairs in big cities nationally and internationally.

b).Renovate the policies of agriculture development for mountainous regions.

The author proposes and suggests the following points:

+ Land policies: in addition to general policies, it is advisable to implement the policy of land consolidation to concentrate the land and allow farmers to hire land to run businesses on a large scale as general planning

+ Improve the policy of allowance for farmers to invest money into business by rights of land use.

4.2.1.3. Promote the role of local authorities

It is essential to form strong local authorities. As for district authorities, it is necessary to focus on directing the development of agriculture on a large or relatively large scale without spontaneous situations.

As for commune authorities, it is necessary to do the following tasks well:

+ Specify concentrated production areas on the basis of projects of general development for mountainous regions.

+ Universalize legal knowledge and state management to have the ability to lead the socio-economic development effectively.

+ Coordinate with district authorities to build commune centers and rural markets.

4.2.1.4. Renovate the investment structure to develop agriculture in the direction of modernization and large-scale production

In addition to intensive investment in development of agriculture produce, it is of the importance for Thanh Hoa's mountainous regions to invest in building agricultural markets, doing scientific research, improving agricultural facilities and developing of human resources.

4.2.1.5. Develop core entrepreneurs

In fact, entrepreneurs play an important role to support farmers to apply high technology into production. The authorities need to take prompt action and complete the following tasks:

+ Attract more companies, corporations outside the province to make use of potentials of the mountainous regions and participate in developing some key aspects.

+ Attract FDI enterprises to promote major sectors in the fields of agricultural production, industry and agriculture produce consumption.

+ Support the formation of the system of on-spot enterprises to cooperate with farmers to develop agriculture.

4.2.1.6. Reduce input costs of agricultural production in mountainous areas

4.2.1.7. Improve people's knowledge and form knowledgeable and skilled agricultural labors in the era of intensively international economic integration and the Industrial Revolution 4.0

a). Improve people's knowledge of agricultural production in the context of climate changes. Propagandize the policies of

agriculture development and new agriculture development on the mass media such as radio and television; propagandize advanced agricultural production models.

Disseminate information about globalization, technology and price of agriculture produce; thereby make farmers understand the positive and negative impacts of globalization on agriculture development; Then, enhance our responsibility and take the initiative in participating in globalization of agriculture development.

b). Vocational training for agricultural workers (agricultural and non-agricultural jobs to transfer agricultural labor to industry and service sectors)

Thanh Hoa Province needs to have a plan to join the Japan-Vietnam Cooperation Program on vocational training for agriculture development (signed in July 2016 in Hanoi). Specifically, the provincial government needs to select agriculture labor to send to Japan or open vocational training classes and invite Japanese experts to teach the workers.

4.2.1.8. Propagate legal regulations and provide information of Free Trade Agreements

4.2.1.9. Develop technical infrastructure to meet the requirements of agriculture development in particular and socio-economic development in mountainous Thanh Hoa in general

The author emphasizes on development of transport network connecting trunk roads with agricultural production areas, improvement of irrigation and power supply networks, agricultural markets and building vocational training centers.

4.2.2. Organize mountainous agricultural production in the direction of modernization

a). Formulate some value chains of agricultural production

The value chain of agricultural produce is a modern and highly effective model of organization of production based on combination of many steps in the process from breeding - planting (or raising) - harvesting - preserving and processing to consumption of agricultural produce. It is the connection that creates the value chain of agricultural produce to ensure the sharing of benefits, risks and increase the mutual binding among subjects.

Normally, each value chain of agricultural production, industrial enterprises or trading companies plays an important role. Businesses associate with agricultural cooperatives. Agricultural cooperatives connect households with processing plants or companies that sell agricultural produce. On applying the theory of production value chain, in mountainous areas of Thanh Hoa, it is necessary to develop the following main value chains: Sugarcane production chain, High quality orange production chain, high-quality sweet melon production chain, grapefruit production chain, dairy chain, beef raising chain, etc.

b). Develop agricultural and industrial complex in the direction of mordernization

Associating areas of producing raw materials with processing premises forms multi-branch complexes. Typically in the mountainous regions of Thanh Hoa, there will be the agricultural-industrial complex of sugarcane and the dairy cow complex; High-quality beef cattle association with grass-growing areas and high-tech meat processing factory, lean pig breeding complex ...

c). Develop hi-tech applied agricultural zones

Thanh Hoa needs to develop hi-tech agricultural zones for some major plants and animals. Depending on specific conditions, each high-tech agricultural area must cover a few dozen to hundreds

of hectares or more. Specifically, it is necessary to focus on developing in the direction of forming high-tech sugarcane agricultural zones; high-tech agriculture orange seed farm area of thousand hectares similar to the US; high-tech agricultural zones of melon or Kim Hoang Hau melon like Israel on a 1000-hectare scale; hi-tech agricultural zone of high-quality green vegetables of a few tens of thousands of hectares; High-tech agricultural zone for raising cow with scale of 2,5-3,000 cows; High-tech agricultural area for raising high-quality beef cattle with the size of several tens of cows for meat; Co Lung special hi-tech agricultural zone on a scale of several tens of thousands of ducks ...

d). Develop models of production on sloping land associating agriculture with forestry

It is of the essence for mountainous regions in Thanh Hoa. The development of agricultural production models on sloping land should focus on the direction of: Developing specialized industrial plants; Developing fruit trees combined with planting medicinal herbs; Developing perennial trees (industrial or fruit trees) in combination with afforestation.

4.2.3. Developing technical infrastructure to meet the requirements of agricultural development in particular and socio-economic development in general in mountainous areas of Thanh Hoa

Improve transportation system, power supply network; irrigation system; building agricultural markets and information centers for agriculture

4.3. General assessment and suggestions

Despite preliminary calculations, based on the successful implementation of the orientations and solutions proposed by the author, the efficiency of agriculture development in mountainous

areas of Thanh Hoa has been significantly improved. Most of the efficiency indicators in 2025 are about 1.7-1.9 times compared to 2018. After only 7 years, the average value of per capita agricultural population is about 1.8 times (an absolute increase of more than VND 12 million at 2010 prices). The author proposes that the government should be politically determined; enhance the role of promoting agriculture development, on a large scale in the mountainous areas.

CONCLUSION

i).The thesis has put effort into clarifying the concept of mountainous agriculture and agriculture development efficiency in mountainous areas in such a Socialism-oriented market economy and globalization. Agriculture development efficiency in mountainous areas takes into account requirements of the Socialism-oriented market economy (by way of respecting market economy rules, state management, fairness and equality for agriculture-related persons and to the economy as a whole). The author has repeatedly pointed out key elements affecting agriculture development efficiency and has successfully identified a set of evaluation indicators to agriculture development efficiency in mountainous areas in Vietnam.

ii). The thesis has stated that the potential for agriculture development in the mountainous areas of Thanh Hoa province is relatively huge, which may lead to the creation of unique agricultural products with higher quality and greater biological productivity than other places. Agricultural market inside and outside the province for mountainous products of Thanh Hoa is also large. However,

agriculture structure in mountainous areas has so far been stuck with the traditional form that is neither organized nor modern. Generally speaking, technology employed for agricultural production in mountainous areas is of low quality, thus agricultural production efficiency is low and a large number of farmers have led such an arduous life.

iii). Improving agricultural development efficiency in mountainous areas of Thanh Hoa province is realistic and well-grounded. With a view to exploiting the remaining potential of mountainous agriculture development to the fullest, rotation of thoughts, perspectives and orientation shall be acquired in accordance with implementation of resolutions, especially resolutions on the effectiveness of state management. Management of provincial, district and commune authorities should be associated with the renovation of crop structure and livestock towards developing large-scale key agricultural products, developing high quality and high degree of centralization in production. This would create an appealing destination for investment of enterprises in order for them to form key products and develop hi-tech agriculture

LIST OF PUBLISHED SCIENTIFIC WORKS

1. Promoting comparative advantages of forming key agricultural products to enrich farmers in mountainous areas of Thanh Hoa province, Journal of the Asia Pacific Economy, No. 457, August 2019; page 66.

2. Improving agricultural production efficiency in mountainous areas of Thanh Hoa province, Journal of Economics and Projections, No. 14, May 2017, page 88.

3. Agriculture development in mountainous areas of Thanh Hoa province: Approach from the market associated with modernization; Journal of the Asia Pacific Economy, No. 548, September 2019, page 38.