



## ASSESSMENT OF STATE MANAGEMENT AND USE OF PADDY RICE LAND AT YEN DINH DISTRICT, THANH HOA PROVINCE

Nguyen Thi Hong Hanh<sup>1</sup>, Do Thi Tam<sup>2</sup>,  
Hoang Thi Phuong Thao<sup>1</sup>, Phan Van Hoang<sup>3</sup>

<sup>1</sup>Hanoi University of Natural Resources and Environment

<sup>2</sup>Vietnam National University of Agriculture

<sup>3</sup>Hanoi Land Registration Office

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### Abstract

*The research focuses on the management and use of paddy rice land at Yen Dinh district, Thanh Hoa province. The research results show that in 2016, Yen Dinh district had 10,152.61 ha of paddy rice land; among those, 9,973.92 hectares is regular arable land. The entire area of land for rice cultivation has been allocated to different stakeholders for rice cultivation; 86.53% of total land was allocated to households and individuals while 13.47% of total land is allocated to domestic organizations. Up to now, the district has completed issuing 81.2% of new land use right certificates. The cadastral record of paddy rice land has been updated regularly according to the regulations of the Ministry of Natural Resources and Environment. In recent years, paddy rice land changes tend to decrease, completely in the control of the local. In order to improve the management and utilization of paddy rice land, we propose 2 groups of solutions: policy measures (economic, land management and protection, training and development of rural careers, propaganda, raising public awareness) Technical solution.*

**Keywords:** State management; Paddy rice land; Yen Dinh district

**Corresponding author. Email:** [nthhanh.qldd@hunre.edu.vn](mailto:nthhanh.qldd@hunre.edu.vn)

### 1. INTRODUCTION

In the context of the ever-changing economy, the demand shift for agricultural land in general and paddy rice land in particular for non-agricultural uses will be inevitable in the near future. Along with the development of the whole region, the Yen Dinh district, Thanh Hoa province has formed a number of businesses, services, and infrastructures, which have partly reduced paddy rice land area. The problem is that there

must be a harmonious solution between economic development and protection of paddy rice land fund to ensure the land is used for socio-economic development but also protects the good quality paddy rice land for national food security. Therefore, it is necessary to clearly identify the management and use of the area of paddy rice land that needs long-term protection. This is the reason that we conducted a study to evaluate the current situation of paddy rice land management and use in Yen Dinh district, Thanh Hoa province.

## 2. METHODOLOGY

In the study, the collected data of existing land management includes the cadastral records of paddy rice land, land allocation and land use right certificates, as well as the comprehensive plan of rice cultivation by 2020 from the People's Committee of Yen Dinh district. The data was also based on the actual use of paddy rice land from Department of Natural Resources and Environment in Yen Dinh district.

The primary data collection was implemented by survey groups. Investigating, controlling, and adjusting the variation in rice areas are identified by each subject in the field survey in the local area.

The questionnaires are used in the area of 5 representative communes according to the size of the commune's paddy land area. More specifically: (1) the commune has an area of more than 500 hectares of paddy land (Dinh Tang); (2) the commune has 400 - 500 ha of paddy land (Quy Loc); (3) the commune has a rice-growing area of 300 - 400 ha (Yen Tho); (4) the commune has a rice-growing area of 200 - 300 ha (Yen Phu); (5) communes have rice land area of less than 200 ha (Yen Truong); (6) the commune has a low area of rice cultivation, less than 100 ha (Quan Lao town). The total number of responses issued was 90 votes with the average vote of 15/ commune, town.

Information, data and documents collected will be analysed associated with the impact factors, issues related to the project content in the form of qualitative and quantitative. The collected information, documents and data are processed by popular statistical softwares and Microsoft Excel.

## 3. RESULTS

### 3.1. Existing paddy rice land management

#### 3.1.1. *The cadastral records of paddy rice land*

##### *a) Cadastral map*

The entire area of agricultural land outside the residential area (mainly paddy rice land) in the area of communes and towns of Yen Dinh district has been official cadastral measured according to the coordinate system VN-2000, scale 1/2.000 (2012-2013). Accordingly, the district has 442 cadastral maps with the area of paddy rice land outside the residential area at 1/2.000 scale. The number of cadastral maps of cultivated land (paddy rice land) outside the residential area between communes varies widely, depending on the size and shape of each commune. The commune with the largest cadastral map is Quy Loc (27 sheets), the commune with the fewest cadastral maps is the Yen Phong commune, Yen Bai (09 sheets).

In addition, the mapping of land use status is conducted once every five years together with the inventory of land. Performing the task of land inventory in 2014, the district land use map has been mapped at 1/25.000 scale and the current land use map for 29 communes/towns at 1/5.000 and 1/2.000. Current maps are established by digital technology.

##### *b) Cadastral books, land register books, books for monitoring land changes*

In the area of communes and towns of Yen Dinh district, in addition to the cadastral map, cadastral files in communes and towns also have the cadastral book, list of books, books for monitoring changes of land. These books are made according to form No. 01 / DK;

02 / DK; 03 / DKK guided in the Circular No. 29/2004/TT-BTNMT of November 1<sup>st</sup>, 2004 and the Ministry of Natural Resources and Environment's Circular No. 09/2007/TT-BTNMT of August 2<sup>nd</sup>, 2007 guiding Set up, adjust and manage cadastral records. The information on the cadastral book, the list of records is quite enough about the land users, land plots of current users, area, type of land,... basically reflects the actual status of paddy rice land of communes towns in the district. Particularly, the book for monitoring land changes (including changes in the land area for rice cultivation), although each commune has 1 book but not updated regularly and fully. Currently, with the new cadastral mapping system being re-measured in 2012 - 2013, localities are rebuilding the bookkeeping system as guided in Circular No. 24/2014/TT-BTNMT dated 19/05/2014 of the Ministry of Natural Resources and Environment Regulations on cadastral records.

### **3.1.2. Land allocation and land use right certificates**

As of 01/01/2016, the total area of paddy rice land of Yen Dinh district (10,152.61 ha) has been allocated to the users. Specifically: allocated to households and individuals used 8,785.02 ha, accounting for 86.53% of the total area of rice farming district; Assigned 1,367.5 hectares to local organizations, accounting for 13.47%.

- The issuance of certificates of land use rights for rice cultivation for households and individuals has been implemented before 2003. However, after the implementation of land consolidation, land conversion, and land surveying. Up to now, the district has been organizing the grant of new land use right certificates to organizations, households and individuals, including land for rice. Up to now, the district has completed the issuance of new certificates of land use right certificates, agricultural land for households and individuals, reaching the rate of 81.2%.

### **3.1.3. Summing up the planning of rice cultivation till 2020**

\* The target of paddy rice land allocation in the provincial land use plan approved by the Government:

Land use planning up to 2020 and the first 5-year land use plan (2011 - 2015) in Thanh Hoa province were approved by the Government in Resolution No. 74/NQ-CP dated 12 November 2012, The province has allocated land for all localities. Based on Decision No. 648/QD-UBND dated March 10<sup>th</sup>, 2014 of the People's Committee of Thanh Hoa province on the approval of land planning to 2020, the land use planning for the first period (2011 - 2015) of Yen Dinh district, the province's paddy rice land allocated to the district by 2015 is 9,539.99 hectares (of which paddy rice land is 9,342,70 hectares); By 2020, 9,421.99 ha (of which paddy rice land for cultivation is 9,400.70 ha).

**Table 2. Area of paddy rice land to 2020 in land use planning Yen Dinh district is expected to allocate to the communes**

*Unit of calculation: ha*

<b>Ordinal</b>	<b>Administrative unit</b>	<b>Status of 2016</b>	<b>Planning of 2020</b>	<b>Comparison</b>
1	Quan Lao town	39,46	14,95	-24,51
2	Thong Nhat town	36,40	166,19	129,79
3	Yen Phu commune	282,60	282,27	-0,33
4	Yen Lam commune	432.81	426.26	-6.55

Ordinal	Administrative unit	Status of 2016	Planning of 2020	Comparison
5	Yen Tam commune	361.07	334.72	-26.35
6	Yen Giang commune	299.59	311.08	11.49
7	Quy Loc Commune	461.89	532.08	70.19
8	Yen Tho commune	349.62	367.28	17.66
9	Yen Trung Commune	394.74	375.36	-19.38
10	Yen Truong commune	177,85	168,29	-9,56
11	Yen Bai Commune	246,68	208,26	-38,42
12	Yen Phong Commune	313.33	265.86	-47.47
13	Yen Thai Commune	216.02	179.79	-36.23
14	Yen Hung Commune	345,32	322,13	-23,19
15	Yen Thinh commune	312,32	284,02	-28,3
16	Yen Ninh commune	367,92	306,08	-61,84
17	Yen Lac commune	362,67	306,12	-56,55
18	Dinh commune increase	625.06	533.27	-91.79
19	Dinh Hoa Commune	689.08	603.67	-85.41
20	Dinh Thanh Commune	501.59	496.62	-4.97
21	Dinh Cong Commune	264,91	225,92	-38,99
22	Dinh Tan Commune	479.01	393.01	-86
23	Dinh Tien Commune	524,68	488,65	-36,03
24	Dinh Long Commune	183,61	179,63	-3,98
25	Dinh Lien Commune	323.73	259.83	-63.9
26	Dinh Tuong Commune	380.40	325.01	-55.39
27	Dinh Hung Commune	478,00	414.99	-63.01
28	Dinh Hai Commune	288,18	263,64	-24,54
29	Dinh Binh Commune	414.06	387.01	-27.05
	Whole district	10,152.61	9,421,99	-730,62

Source: Land use planning of Yen Dinh district until 2020

Thus, the area of rice cultivation till 2020 in Yen Dinh district is kept as in the distribution of the province.

\* Recommendations of communes and townships:

Based on the tasks and objectives of socio-economic development as well as

the planning such as land use planning, new rural construction planning, industrial zones, urban planning, Communes and towns have proposed the need to change the purpose of paddy land for other purposes other than rice in the period 2016 - 2020 as shown in the following table:

**Table 3. Area of paddy rice land to 2020 proposed by communes, Yen Dinh district, Thanh Hoa province**

Unit of calculation: ha

Ordinal	Administration unit	Status of 2016	Demand for change of purpose By 2020				Area of expanded	Area to 2020
			Total	PNN	HNK	TSN, LNQ, NHK		
1	Quan Lao Town	39,46	26,69	26,69			2,18	14,95
2	Thong Nhat Town	36,40	4,24	1,28		2,96	134,03	166,19

Ordinal	Administration unit	Status of 2016	Demand for change of purpose By 2020				Area of expanded	Area to 2020
			Total	PNN	HNK	TSN, LNQ, NHK		
3	Yen Phu Commune	282,60	8,12	4,88		3,24	7,79	282,27
4	Yen Lam Commune	432,81	11,23	6,13		5,1	4,68	426,26
5	Yen Tam Commune	361,07	37,75	35,65		2,1	11,4	334,72
6	Yen Giang Commune	299,59	24,11	20,86		3,25	35,6	311,08
7	Quy Loc Commune	461,89	5,19	0,94		4,25	75,38	532,08
8	Yen Tho Commune	349,62	3,16	1,06	1	1,1	20,82	367,28
9	Yen Trung Commune	394,74	28,25	24,3	1	2,95	8,87	375,36
10	Yen Truong Commune	177,85	11,89	7,78	1	3,11	2,33	168,29
11	Yen Bai Commune	246,68	40,18	21,17	3	16,01	1,76	208,26
12	Yen Phong Commune	313,33	51,47	42,4	1,5	7,57	4	265,86
13	Yen Thai Commune	216,02	39,13	34,73	2,3	2,1	2,9	179,79
14	Yen Hung Commune	345,32	23,19	16,49	1,7	5		322,13
15	Yen Thinh Commune	312,32	37,15	29,15		8	8,85	284,02
16	Yen Ninh Commune	367,92	61,84	56,32		5,52		306,08
17	Yen Lac Commune	362,67	64,23	58,73	2	3,5	7,68	306,12
18	Dinh Commune increase	625,06	91,79	85,27	3,4	3,12		533,27
19	Dinh Hoa Commune	689,08	85,41	83,29		2,12		603,67
20	Dinh Thanh Commune	501,59	14,51	10,51	1	3	9,54	496,62
21	Dinh Cong Commune	264,91	39,08	35,28	1	2,8	0,09	225,92
22	Dinh Tan Commune	479,01	86	78,75	1	6,25		393,01
23	Dinh Tien Commune	524,68	37,55	31,65	2,4	3,5	1,52	488,65
24	Dinh Long Commune	183,61	5,44	1,64	1	2,8	1,46	179,63
25	Dinh Lien Commune	323,73	63,9	59,67	1,3	2,93		259,83
26	Dinh Tuong Commune	380,40	58,72	56,32		2,4	3,33	325,01
27	Dinh Hung Commune	478,00	63,01	60,41		2,6		414,99
28	Dinh Hai Commune	288,18	27,25	24,26		2,99	2,71	263,64
29	Dinh Binh Commune	414,06	31,33	26,83		4,5	4,28	387,01
	Whole district	10.152,61	1081,81	923,44	24,6	133,77	351,2	9.421,99

Source: Land use planning of Yen Dinh district until 2020 and synthesis of survey data

From the above table shows that in the period 2016 - 2020, according to the proposal of communes and towns in the district, the area of rice cultivation is expected to transfer about 1000 ha to other purposes (of which: to non-agricultural areas of nearly 900 hectares and to serve structural change in agriculture of more than 130 hectares). Thus, by 2020, the total land fund for paddy cultivation will be about 9,421.99 hectares.

### 3.2. The actual use of paddy rice land in Yen Dinh district

#### 3.2.1. The current state of land use for rice cultivation in 2016

Yen Dinh district has a total area of 10,152.61 ha of paddy rice land, of which 9,973.92 ha is paddy rice land (2 crops per year), accounting for 98.24% of the total paddy rice land area. ; The remaining paddy rice land area is 178.69 hectares, accounting for 1.76%. Rice paddy rice land is available in all 29/29 communes

and towns in the district, but the size of communes and towns is not equal: Dinh Tang, Dinh Hoa, Dinh Thanh, Dinh Tien); 05 communes covering 400 - 500 ha (Yen Lam, Quy Loc, Dinh Tan, Dinh Hung, Dinh Binh); 10 communes with an area of 300 - 400 ha (Yen Tam, Yen Tho, Yen Phong, Yen Trung Yen Hung, Yen Thinh, Yen Ninh, Yen Lac, Dinh Lien, Dinh Tuong); 06 communes with an area of 200 - 300 ha (Yen Phu, Yen Giang, Yen Bai, Yen Thai, Dinh Cong and Dinh Hai); The remaining communes have paddy rice land under 200 ha; In two towns of

the district have a low area of paddy rice land, less than 100 hectares.

### **3.2.2. Summing up the investment in rice production in 2016 in Yen Dinh district**

Based on surveys and interviews conducted directly from some agricultural production households as well as through discussions, working and study in localities, the current investment in rice production in Yen Dinh district general for 500 m<sup>2</sup> is compiled and calculated as shown in Table 4.

**Table 4. Summary of investment in rice production in 2016 Yen Dinh district, Thanh Hoa province**

*Unit: calculated for 500 m<sup>2</sup>*

Ordinal	Item	Quantity unit	Number	Price (VND)	Amount (VND)
1	Investment cost	VND			1,622,500
1.1	Land preparation (plow, harrow)		1	180.000	180.000
1.2	Same	Kg	2	35.000	70.000
1.3	NPK fertilizers	Kg	25	13.500	337.500
1.4	Plant protection products	Liter	1	35.000	35.000
1.5	Herbicides (Niphosate 480 SL)	Liter	0,5	60.000	30.000
1.6	Rat Removal (Racumin 0.75TP)	vial (20gr)	2	20.000	40.000
1.7	Transplant		2	130.000	260.000
1.8	Harvest (reap)		2	150.000	300.000
1.9	Public care		2	150.000	300.000
1.10	Chatter		1	70.000	70.000
2	Value obtained				1.974.000
3	Net income				351.500

From the table above, to produce a “sao” of Trung Bo” (500 m<sup>2</sup>) in one crop, if the farmers have to lease completely, the average farmer has to invest about 32-3 million VND/ha/crop. Thus, with the yield of rice about 65.8 quintals / ha, the price of rice at the time of investigation is 6,000 VND/kg (600 thousand VND/quintal), the value obtained from rice production is about 39.48 million VND/ha/crop (about 1.97 million/“sao”). If there is a deduction of the investment costs, farmers will earn

a net profit of about 6.5 - 7.0 million VND/ha/crop (about 350 - 370 thousand VND/“sao”/crop).

### **3.2.3. The fluctuation of paddy rice land area in the period 2000 - 2016**

The results of land inventories in the 2000 and 2010 period and those of land statistical and inventory till 2016 shows that in 16 years (from 2000 to 2016) rice cultivation in Yen Dinh district has the following changes:

**Table 5. Changes in paddy rice land in the period 2000 - 2016 in the district**

<b>Ordinal</b>	<b>Situation fluctuation</b>	<b>Land for rice (ha)</b>
1	Area in 2000	9.482,61
2	Area 2005	9.770,66
3	Area in 2010	9.607,76
4	Area 2013	9.594,67
5	Area 2014	10.223,88
6	Area 2015	10.222,22
7	Area in 2016	10.152,61
8	Fluctuations 2000 - 2005	288,05
9	Fluctuations 2005 - 2010	-162,90
10	Fluctuations 2010 - 2013	-13,09
11	Fluctuations 2013 - 2014	629,21
12	Fluctuations 2014 - 2015	-1,66
13	Fluctuations 2015 - 2016	-69,61
14	Fluctuations 2010 - 2016	544,85
15	Fluctuations 2000 - 2016	670,00

*Source: Collected from the results of land inventory and statistics over the years*

During 16 years from 2000, paddy rice land in Yen Dinh district increased 670 hectares. However, the actual comparison between the years, the land of paddy tends to decrease. Of which, in the period 2000 - 2005, the area of paddy rice land increased by nearly 300 hectares due to errors in the measurement process and part of the land area by planting other annual crops to paddy rice land. From 2005 to 2013, the area of paddy rice land decreased continuously from 9,770.66 hectares (2005) to 9,594.67 hectares (in 2013), down 175.99 hectares, the average annual decrease of about 20 hectares.

Comparing with land statistics in 2013 (up to 01/01/2014), Yen Dinh district has a total area of 9,594.67 hectares of paddy rice (9,164.28 hectares of paddy rice land and paddy rice land 428,39 hectares) with a land inventory area in 2014 (until 31/12/2014), the area of paddy rice land increased by 629.21 hectares. The main reason is that the statistics of paddy rice land in 2013 are reviewed and based on historical cadastral mapping system with a hypothetical coordinate

system and low accuracy. In addition, there is an additional portion of paddy rice land converted from land by other annual crops from new irrigation facilities. From 2014 to 2016, the area of paddy rice land decreased by 71.27 hectares.

#### *Causes of fluctuations in the area of paddy rice land*

The area of paddy rice land under fluctuation decreased between 2005 and 2016 in the district, which is determined mainly by moving to new infrastructure development and construction, transportation, irrigation, culture, health, education, sports. This reduction is also caused by the development of residential areas in urban and rural areas, construction of production and business facilities as well as development of economy and internal conversion in agricultural land (to aquaculture, fruit trees). Although land for rice cultivation fluctuates but mostly decreased as planned, serving the transformation of the economic structure is the main cause spontaneous reductions also occurred, which is not common at the scale of control. In addition, during the period

2005 - 2013, the district land consolidation, land conversion and cadastral mapping showed many differences due to errors in the process of measurement and synthesis area after measurement of land plot change. There is a difference between 2013 and 2016 due to errors in the application of different methods of inventory between two 2010 inventory periods..

### **3.3. A general assessment of the management and use of paddy rice land in Yen Dinh district**

#### ***3.3.1. About the management of paddy rice land***

##### ***a) Advantages***

The paddy rice land management records are quite adequate. The cadastral database is relatively synchronous based on the cadastral survey. The new cadastral map system is completed, which is quite good for the system. The management of inventory, land and local paddy rice land funds is well-implemented

The complete land register in communes and towns is an important source of data to hold the whole land fund for rice cultivation to each land plot and each land user as well as to serve the issuance and exchange of paper. Certificate of land use right is also given to residents legally..

The planning and protection of paddy rice land fund are vital from the province to district and commune level, particularly at the provincial level. Thanh Hoa is one of the few leading provinces in planning paddy rice land for food security at the request of the Central, National Assembly and Government.

##### ***b) Drawbacks***

The storage, monitoring and updating of rice cultivation land have not been taken

seriously. Some communes are equipped with cadastral files, but updating is not done regularly. Inventory of land is not in line with the reality.

#### ***3.3.2. About the current status, fluctuations in the use of paddy rice land***

##### ***a) Advantages***

Most of paddy rice land in Yen Dinh district is cultivated with 2 crops of rice. Although the land of rice cultivation has been on the downward trend in recent years. However, people have learned to apply the advances and achievements of science and technology in agricultural production in general and in food production, particularly in the fields of seeds, fertilizers, cultivation, plant protection, harvesting, and tillage. Therefore, the productivity and output of rice still reach the set planned target.

The rate of reduction of paddy rice land has improved markedly in each period and tends to slow down. This shows that the paddy rice land fund is still under control and there are many positive signs in the protection of paddy rice land fund.

##### ***b) Drawbacks***

The average area of land for rice cultivation is low and the land is still fragmented. Therefore, it has not created the conditions and facilities to build and form large fields of concentrated cultivation.

Furthermore, the average income from rice cultivation is very low, while the general trend of the whole society. The demand for land for industrial, service, infrastructure and urban development in Yen Dinh district is quite large. It is necessary to secure the land fund for socio-economic development with the management of paddy rice land.

### **3.4. Some solutions to improve the management and use of paddy rice land in Yen Dinh district**

Policy solutions could be changing policies to support rice farmers, renovating investment in improving fields and building irrigation infrastructure, inland traffic; formulating a policy of closely linking rice producers with managers, enterprises and consumers to support and protect each other's interests; having a policy on management and protection of paddy rice land as well as training and development of rural trades and public awareness.

Technical solution are having a basic design of the field; intercropping rice with other annual crops of high economic value; increasing the use of organic fertilizers, microbiological preparations, strict control of the use of chemical fertilizers; establishment of agricultural extension centers and networks of extension workers; application of scientific and technical advances in field improvement.

## **4. CONCLUSIONS**

(1). The results in 2016 in the district show 10,152.61 hectares of paddy rice land. 9,973.92 hectares of which is regular rice cultivation and unequal cultivation is 178.69 ha.

- In order to produce 1 "sao" of Trung Bo (500 m<sup>2</sup>) rice in one crop, the farmer has to lease the whole crop, the average farmer will have to invest about 32 - 33 million VND/ha/crop. So if the productivity and cost at the time of investigation subtract the investment costs, the farmers' net profit will be about 6.5 - 7.0 million/ha/crop (about 350 - 370 thousand dong/"sao"/crop).

(2). About the management of paddy rice land in Yen Dinh district

- On 01 January 2016, the total area of paddy rice land in Yen Dinh District (10,152.61 ha) was allocated to households (86.53% of households and individuals) for local organizations, 13.47% of the total area of rice cultivation in the district). Up to now, the district has completed the issuance of new certificates of land use right certificates, agricultural land for households and individuals, reaching the rate of 81.2%.

- Cadastral map: The entire area of agricultural land outside the residential area (mainly paddy rice land) in the area of communes and towns of Yen Dinh district was measured cadastral official Coordinate VN - 2000, rate 1/2.000 (2012 - 2013). According to this, the district had 442 cadastral maps with the area of paddy rice land outside the residential area at 1/2000 scale;

- Cadastral books, land inventories, books for monitoring land changes: These types of books were compiled according to the guidance in Circular No. 29/2004/TT-BTNMT dated November 1, 2004 and Circular No. 09/2007/TT-BTNMT dated 02/8/2007 of the Ministry of Natural Resources and Environment. However, nowadays, every commune and town has a book for monitoring land changes, but the update process has not been done regularly. Up to now, the bookkeeping system has been updated as guided in the Ministry of Natural Resources and Environment's Circular No. 24/2014/TT-BTNMT of May 19, 2014 on the cadastral dossiers.

(3). Regarding the 16 years of land use change (from 2000 to 2016), the area of Yen Dinh district increased by 670 hectares. However, the actual comparison between the years, the land of paddy tends to decrease. Of which, during the period

from 2000 to 2005, the area of paddy rice land increased by nearly 300 hectares due to errors in the measurement process and part of the land area by planting other annual crops to paddy rice land. From 2005 to 2013, the area of paddy rice land decreased continuously from 9,770.66 hectares (2005) to 9,594.67 hectares (in 2013), down 175.99 hectares, the average annual decrease of about 20 hectares. From 2014 to 2016, the area of paddy rice land decreased by 71.27 hectares.

(4) In order to improve the management and utilization of paddy rice land, we propose 2 groups of solutions: policy measures (economic, land management and protection, rural trades, propaganda, raising public awareness) and technical solutions.

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## PSSA - INTERNATIONAL SOLUTION OF MARINE...

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