

# **REPORT ON ESTABLISHMENT OF QUALITY AND SAFETY MANAGEMENT SYSTEM**

under project

**“Strengthening Vietnamese SPS capacities for trade – *Improving safety and quality of fresh vegetables through the value chain approach*”**

**MTF/VIE/046/STF (STDF/PG/259)**

## **I. Introduction**

Vegetable sector is an important and essential part of agricultural production in particular and of the national economy in general. Recently, vegetable production in Vietnam has rapidly increased in both yield and productivity as well as clearly demonstrated the central role in the commodities production, importantly contributing to the improvement of farmers’ living standard. In addition, vegetables production has dealt with employment not only for a large proportion of labor at farm level, but so as to collectors, distributors, processors and retailers.

Besides the achievements, vegetable production sector, however, has been obstructed by issues of food quality and safety. Meanwhile contamination level of microorganisms, chemical residue, antibiotics, heavy metal contents in agricultural commodities has become more and more serious causing negative effects on human’s health and the environment, vegetable quality and safety management at all stages, from production to consumption, has not been paid enough attention, thus still existed weaknesses and limitations. Despite promulgation of articles of law on sanitary and phytosanitary, it remains challenges of overapplication of pesticides and other agrichemicals so as to farmers’ unawareness of good agricultural practices at farm level. Pesticides are usually applied in excessive concentration and farmers often ignore or are unaware of safe postharvest techniques. Additionally, poor postharvest handling in fruit and vegetable production contributes to reduction of value and quality of agricultural commodities. Weak linkage between actors (producers, collectors and retailers) in the supply chains is an unavoidable result of the poor food safety and quality management.

In order to overcome the challenges in vegetable production, it is necessary to establish and improve the quality and safety management system at all levels, from collecting through processing to consumption. Establishment of quality and safety management system in three project provinces was one of the activities that contributed to the overall objective of the project “Strengthening Vietnamese SPS

capacities for trade – *Improving quality and safety of fresh vegetables through the value chain approach*”.

## **II. Specific objectives**

Establish a model of internal quality management system in each project site; inspect, monitor and assist farmers in implementing regulations/requirements in safe vegetable production from cultivation to documentation.

## **III. Activities**

1. Establish organizational structure of the internal quality control system
2. Assemble and establish management document system
3. Establish pilot production demonstration; inspect, monitor and assist farmers in implementing safe vegetable production protocols and keeping records through FFS training.

## **IV. Outputs/Outcomes**

### ***1. Establishment of organizational structure of the internal quality control system***

The internal quality control system is the main part of the quality and safety management system of an production establishment. Its organizational structure includes director/ owner, technicians cum internal inspectors, and producers.

- *Director/Owner*: a person who takes the highest responsibility in the production establishment and commitent to assuring quality of their commodities

- *Technician*: a person who is trained in quality management, good cultivation protocols and that is simultaneously internal inspector of the production establishment, responsible for:

+ Implenenting policies on quality of the production establishment that are promulgated by its director/owner

+ Monitoring commodities’ quality and implementation of good cultivation protocols

- *Producer*: a person who directly implements production protocols to produce quality commodities. Producers need to be trained in cultivation techniques and instructed in all stages of the production; and is responsible for following established ciultivation portocol

Based on the organizational structure, together have we– FAVRI and leaders of the project production establishments- set up the quality and safety management systems as followings:

*Thanh Nghia Cooperative, Don Duong district, Lam Dong province:*

*Cooperative Director*: Mr. Nguyen Van Luom, who is the head of the cooperative and takes the primary responsibility for assuring quality and safety of

the commodities. Two teams for technical and control assistance are established to assist cooperative director.

*Technical Team:* involvi gMr. Do Van Huynh – Leader of the Technical Team, Mr. Nguyen Huu Hanh and Mr. Nguyen Trau – technicians, who achieved intermediate-level certificate in agronomy. During the time of the project implementation, they took part in the training program in quality management and cultivation techniques in safe vegetable production. The main responsibilities of the Technical Team are together with the Control Team to inspect and supervise farmers implementing safe vegetable production and recording all production activities from seedling production/purchase through applying fertilizer and pesticide, to harvest and selling out.

*Control Team:* involving Mr. Nguyen Huu Hanh - Leader of the Control Team, Mr. Nguyen Trau and Nguyen Quoc – controllers, who achieved intermediate-level certificate in agronomy. During the time of the project implementation, they all participated in the training program in quality management and cultivation techniques in safe vegetable production. The main responsibilities of the Control Team are to assist the Cooperative Director in implementing policies on quality, together with technicians to direct and supervise the implementation of established cultivation protocols of the farmers

*Producers:* there were 10 households selected to participate in the pilot demonstration and they were divided into 2 producer groups based on the commodities: Tomato group (involved households of Mrs. Tran Thi Gai, Mr. Nguyen Tan Xi, Tran Van Mang, Nguyen Van Lanh and Nguyen Dinh Quy) and cabbage group (involved households of Mr. Tran Van Tinh, Huynh Tan Cong, Nguyen Huu Hanh, Nguyen Da, and Thai Ke Thanh). All the 10 households selected are members of the Cooperative and have years of experience in vegetable production. During the time of project implementation, they were trained in safe vegetable cultivation protocols, keeping records of production activities. They are ones who directly make vegetable commodities, thus the commodities' safety and quality available, and ones who are under the inspection and monitoring of the technicians and controllers of the Cooperative.

*19/5 Cooperative, Moc Chau District, Son La province*

*Cooperative Director:* Mr. Nguyen Van Think – who is the head of the cooperative and takes the primary responsibility for assuring quality and safety of the commodities.

*Technical cum Control Team:* involving 5 people Mr Nguyen Van Thai – team leader, holds a bachelor’s degree; Mr. Trinh Ngoc Huy – holds an intermediate-level certificate in agronomy; Mr. Tran Van Thi, Nguyen Van Chinh and Dinh Van Hung. All the members in the Technical Team were trained in safety and quality management and cultivation techniques in safe vegetable production through the project’s training program. The main responsibilities of the Technical Team are to assist the Cooperative Director in implementing policies on quality, to inspect and supervise farmers implementing safe vegetable production and recording production activities from seedling production/purchase through fertilizer and pesticide application, to harvest and selling out.

*Producer:* Different than Thanh Nghia Cooperative in Lam Dong province, 19/5 Cooperative operates under the agricultural service form that provides raw materials and purchase commodities. In the small cultivation area of the Cooperative, the pilot demonstration was carried out in the chayote and off-season tomato. The Cooperative commissioned the technicians in the Technical Team, including Mr Tran Van Thi, Nguyen Van Chinh, Dinh Van Hung and Trinh Ngoc Huy, to perform activities in establishment of the demonstration.

*HAVECO - Hai Hung Quality Food processing Joint Stock Company, Hung Yen province*

The Company specializes in producing processed vegetables for export to Europe (France, Ukraina, Russia). As an initial requirements, it has established its own quality management system based on HACCP standards. In addition to 9 ha of its areable land, the Company had contracted with 100 households in the district for the input material source. Another amount of raw materials for processing in the Company is collectively obtained from other production areas. Therefore, it has not completely taken the initiative in raw material source and not yet had a system to manage the quality of the input sources. According to the overall and specific objectives, a system of quality and safety management on the input raw materials has been established, including:

General Director; Mr Vu Dinh Duan, who takes the highest responsibility in the production establishment and committed to assuring quality of their commodities

*Technical Department* involving 4 technicians, Mr. Tran Van Tuyen – Chief of the Department, Mr. Nguyen Van Thinh, Hoang Van Hanh and Vu Dinh Dan – all hold a bachelor’s degree. All the members in the Technical Team were trained in safety and quality management and cultivation techniques in safe vegetable

production through the project's training program. The main responsibilities of the Technical Team were to assist the Cooperative Director in implementing policies on quality, to inspect and supervise the labor in the Company and other contract farmers implementing safe vegetable production and recording production activities from seedling production/purchase through applying fertilizer and pesticide, to harvest and transport to the processing manufacturer.

*Producer:* the same situation to 19/5 Cooperative in Son La Province, the Company commissioned the Technical Team to be directly responsible for establishment of the demonstration field (included 1 ha of cherry tomato and 1 ha of baby cucumber).

Besides the organizational structure of the Cooperatives and Company their own, FAVRI also established a team of 1 technical officer and 1 inspector to collaborate with them in monitoring the internal control system as well as to instruct and supervise farmers regularly keeping records of their production activities and implementing the safe production protocols.

## ***2. Establishment of management document system***

Training materials, including Quality and Safety management Handbook; Production Standards, Guideline on VietGAP, and other records and guideline documents... are considered management documents in the quality and safety management system.

During the project implementation time, involved FAVRI staff in collaboration with leaders of the Cooperatives and Company in the project collected and classified the documents, information as well as legal circulars and rulings of the state on quality and safety management to complete a full code and suitable with the objectives and circumstances of each project site. The established materials included:

- Handbook of Quality and safety management in fruit and vegetables
- Guideline on VietGAP for vegetables
- Guideline on keeping records in VietGAP for vegetables production
- Leaflet on VietGAP cultivation protocols for target vegetables

Those are materials used in the training program for both the producers and management cadres in the project sites.

### *Handbook of quality and safety management in fruits and vegetables*

The purpose of such quality and safety management materials were to help the establishment owners (General Director/ Cooperative Director), managers,

technicians and producers (farmers/workers in the processing manufactures...) in the project sites be aware of:

- What is food quality and safety?
- Why is it necessary to produce fruits and vegetables of quality and safety?
- What is the quality and safety management system ?
- What do the establishment owners/managers have to follow in order to assure the quality and safety of their commodities? What do the producers have to do? What are the responsibilities of the state management bodies?
- What is safe vegetable production implementing VietGAP?

#### *Guideline on VietGAP*

This is the technical material for target vegetables in each project site: tomato and cabbage in Don Duong district, Lam Dong province; cherry tomato and baby cucumber in Hung Yen province; off-season tomato and chayote in Moc Chau district, Son La province.

In the guideline, instructions for each target crop on site selection, cultivation techniques, especially fertilizer and pesticide application, and harvest to assure the expected quality and safety level are given.

#### *Guideline on keeping records in VietGAP for vegetables production*

The guideline is constituted of 2 parts: part 1 (Instruction for farmers on taking notes of production activities) and part 2 (Instruction for management cadres, Cooperative directors, farm owners... on initial assessment and selection; training for producers to make them aware of that documentation is the base of traceability of contamination sources that involve in the stages of production and transportation at farm level.

#### *Leaflets on VietGAP cultivation protocols for target vegetables*

Those are the instruction of cultivation techniques for each target crop in the summary form which is easy for farmers to understand and to follow.

### ***3. Establishment of pilot demonstration and monitoring farmers' implementation of cultivation protocols and record keeping in safe vegetable production through FFS training***

Pilot demonstration of safe vegetable production implementing VietGAP at the project sites:

Thanh Nghia Cooperatives, Don Duong district, Lam Dong province: 1 ha of tomato in 2 seasons; 1 ha of cabbage in 2 seasons.

## **LIST OF FARMERS PARTICIPATED IN THE ESTABLISHMENT OF DEMONSTRATION MODEL**

No.	Full name	Cultivation area and crops	
		Tomato	Cabbage
01	Huỳnh Thị Gái	2 000m <sup>2</sup>	
02	Trần Tấn Xí	2 000m <sup>2</sup>	
03	Trần Văn Mạng	2 000m <sup>2</sup>	
04	Nguyễn Văn Lành	2 000m <sup>2</sup>	
05	Nguyễn Đình Qui	2 000m <sup>2</sup>	
06	Trần Văn Tinh		2 000m <sup>2</sup>
07	Huỳnh Tấn Công		2 000m <sup>2</sup>
08	Nguyễn Hữu Hạnh		2 000m <sup>2</sup>
09	Nguyễn Đa		2 000m <sup>2</sup>
10	Thái Kế Thành		2 000m <sup>2</sup>
	<b>Total</b>	10 000m <sup>2</sup>	10 000m <sup>2</sup>

19/5 Cooperative - Moc Chau district, Son La province: 0.8 ha of chayote and 0.3 ha of off-season tomato; involved technicians were Mr. Tran Van Thi, Nguyen Van Chinh, Dinh Van Hung and Trinh Ngoc Huy.

HAVECO, Hung Yen Province: 1 ha of cherry tomato in 2 seasons and 1 ha of baby cucumber in 2 season, involved technicians were Nguyễn Văn Thịnh, Hoàng Văn Thanh và Vũ Đình Dân.

### Outputs/Outcomes

- Assessed and selected cultivation sites as VietGAP requirements, through defining the location of the cultivation area (far from polluted area and highways...), investigating chemical hazards (Cd, Pb, As...) in the soil and water in the area. The investigation result for each project production site showed that all the sites selected satisfied VietGAP requirements for a safe production of target crops. All of the sites were certified by the local MARD that they met VietGAP requirements for production area.

### Analysis result of chemical hazards in the soil and water in the selected sites (Fields in 19/5 Cooperative – Mộc Châu – Son La)

No.	Criteria	Soil			Water		
		Unit	Result	Acceptable limit	Unit	Result	Acceptable limit
1	Arsen (As)	mg/kg	0,1582	12,0	mg/L	0,0001	0,1
2	Cadimi (Cd)	mg/kg	0,0368	2,0	mg/L	0,0005	0,01

3	Đồng (Cu)	mg/kg	1,716	50	-	-	-
4	Kẽm (Zn)	mg/kg	9,20	200		-	-
5	Chì (Pb)	mg/kg	2,92	70	mg/L	0,0053	0,1
6	Thủy ngân	-	-	-	mg/L	0,0007	0,001

Analysis result of chemical hazards  
in the soil and water in the selected sites  
(Fields in HAVECO – Kim Động – Hưng Yên)

No.	Criteria	Soil			Water		
		Unit	Result	Acceptable limit	Unit	Result	Acceptable limit
1	Arsen (As)	mg/kg	7,940	12,0	mg/L	0,0191	0,1
2	Cadimi (Cd)	mg/kg	0,1992	2,0	mg/L	0,0003	0,01
3	Đồng (Cu)	mg/kg	20,00	50	-	-	-
4	Kẽm (Zn)	mg/kg	51,80	200		-	-
5	Chì (Pb)	mg/kg	19,50	70	mg/L	0,0007	0,1
6	Thủy ngân	-	-	-	mg/L	0,0004	0,001

- In addition to training classes, direct instructions on soil preparation, planting and irrigation methods, fertilizer and pesticide application were given to farmers of the pilot demonstration.

There were 7 training classes were held in each project site; 12 days for each class, scheduled according to the crops' growth and development. Training classes were organized in the practical form which combines lecture studying and field practicing.

- Instructed farmers of the pilot demonstration keeping records of the production activities for later-on traceability.

All households of the demonstration field were provided with record-keeping notebooks; and activities in the 2 continuous cultivation seasons were recorded in those notebooks. Besides, all the farmers of the training program (140 farmers in each project province) were provided with the record-keeping notebooks as well as carefully instructed and practice in the class.

- Inspected and monitored cultivation protocols that farmers of the pilot demonstration were applying.

A mission, involving FAVRI staff and the internal monitoring team from the Cooperatives/Company of each project site, was set up to regularly carry out the

intenal inspection and monitoring each 15 days during the production season. The vegetable production was monitored at all specific stages to have, if necessary, timely changes and/or improvements, including field sanitary, assuring the requirements in VietGAP for vegetables. In addition to above-mentioned regular inspections, the mission also contributed to the training program, especially in keeping records, for the farmers of the pilot demonstration.

- Took produce samples for analysis and assessment of the commodities' quality and safety before releasing.

After each production season, the produce were sampled and analyzed to determine potential hazards, such as contents of heavy metals, nitrate, microorganisms, chemical residue... The analysis results indicated that through strictly following the established cultivation protocols as well as other requirements in VietGAP production, the output produce satisfied the requirements of the quality and safety. Amount of chemicals (i.e. heavy metal, nitrate, chemical residue...) and biological hazards (i.e. microorganisms...) was lower than acceptable limits.

Thanh Nghia Cooperative, Don Duong district, Lam Dong province

Tomato – Crop season 1

NO.	Potential hazards	Result	MRL
1	Abamectin	KPH	(0,02)
2	Benomyl	KPH	(0,02)
3	Chlorpyrifos	KPH	(0,1)
4	Cypermethrine	KPH	(0,05)
5	Metalaxyl	KPH	(0,5)
6	Deltamethrin	KPH	(0,5)
7	Arsen (As) mg/kg	0,052	1,0*
8	Cadimi (Cd) mg/kg	0,014	0,1*
9	Đồng (Cu) mg/kg	0,70	30*
10	Thủy ngân (Hg) mg/kg	0,006	0,05*
11	Chì (Pb) mg/kg	0,061	0,1*
12	Nitrate (NO <sub>3</sub> <sup>-</sup> ) mg/kg	135	150*
13	Salmonella TB/g	KPH	0*
14	E.coli TB/g	KPH	10*
15	Coliform TB/g	20	200*

Tomato – Crop season 2

NO.	Potential hazards	Result	Acceptable limit
1	Abamectin	KPH	(0,02)
2	Benomyl	KPH	(0,02)

3	Chlorpyrifos		KPH	(0,1)
4	Cypermethrine		KPH	(0,05)
5	Metalaxyl		KPH	(0,5)
6	Deltamethrin		KPH	(0,5)
7	Arsen (As)	mg/kg	0,064	1,0*
8	Cadimi (Cd)	mg/kg	0,019	0,1*
9	Đồng (Cu)	mg/kg	1,06	30*
10	Thủy ngân (Hg)	mg/kg	0,008	0,05*
11	Chì (Pb)	mg/kg	0,059	0,1*
12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	128	150*
13	Salmonella	TB/g	KPH	0*
14	E.coli	TB/g	KPH	10*
15	Coliform	TB/g	15	200*

### Cabbage – Crop season 1

NO.	Potential hazards		Result	MRL
1	Abamectin		KPH	(0,02)
2	Benomyl		KPH	(0,02)
3	Chlorpyrifos		KPH	(0,1)
4	Cypermethrine		KPH	(0,05)
5	Metalaxyl		KPH	(0,5)
6	Deltamethrin		KPH	(0,5)
7	Arsen (As)	mg/kg	0,120	1,0*
8	Cadimi (Cd)	mg/kg	0,004	0,1*
9	Đồng (Cu)	mg/kg	1,050	30*
10	Thủy ngân (Hg)	mg/kg	0,006	0,05*
11	Chì (Pb)	mg/kg	0,045	0,3*
12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	145	150*
13	Salmonella	TB/g	KPH	0*
14	E.coli	TB/g	KPH	10*
15	Coliform	TB/g	30	200*

### Cabbage – Crop season 2

NO.	Potential hazards		Result	MRL
1	Abamectin		KPH	(0,02)
2	Benomyl		KPH	(0,02)
3	Chlorpyrifos		KPH	(0,1)
4	Cypermethrine		KPH	(0,05)
5	Metalaxyl		KPH	(0,5)
6	Deltamethrin		KPH	(0,5)
7	Arsen (As)	mg/kg	0,165	1,0*

8	Cadimi (Cd)	mg/kg	0,046	0,1*
9	Đồng (Cu)	mg/kg	0,85	30*
10	Thủy ngân (Hg)	mg/kg	0,008	0,05*
11	Chì (Pb)	mg/kg	0,018	0,3*
12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	138	150*
13	Salmonella	TB/g	KPH	0*
14	E.coli	TB/g	KPH	10*
15	Coliform	TB/g	35	200*

HAVECO Company, Kim Dong district, Hung Yen province

Cherry tomato – Crop season 1

NO.	Criteria	Result	MRL
1	Abamectin	KPH	(0,02)
2	Benomyl	KPH	(0,02)
3	Chlorpyrifos	KPH	(0,1)
4	Cypermethrin	KPH	(0,05)
5	Metalaxyl	KPH	(0,5)
6	Deltamethrin	KPH	(0,5)
7	Arsen (As)	mg/kg	0,0184
8	Cadimi (Cd)	mg/kg	0,0547
9	Đồng (Cu)	mg/kg	1,0958
10	Thủy ngân (Hg)	mg/kg	0,0014
11	Chì (Pb)	mg/kg	0,1278
12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	142
13	Salmonella	TB/g	0
14	E.coli	TB/g	4
15	Coliform	TB/g	50

Cherry tomato – Crop season 2

NO.	Criteria	Result	MRL
1	Abamectin	KPH	(0,02)
2	Benomyl	KPH	(0,02)
3	Chlorpyrifos	KPH	(0,1)
4	Chlorothalonil	<0,0002	(5,0)
5	Cypermethrin	KPH	(0,05)
6	Metalaxyl	KPH	(0,5)
7	Deltamethrin	KPH	(0,5)

8	Arsen (As)	mg/kg	0,0195	1,0*
9	Cadimi (Cd)	mg/kg	0,0248	0,1*
10	Đồng (Cu)	mg/kg	1,548	30*
11	Thủy ngân (Hg)	mg/kg	0,0013	0,05*
12	Chì (Pb)	mg/kg	0,02801	0,1*
13	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	146	150*
14	Salmonella	TB/g	KPH	0*
15	E.coli	TB/g	5	10*
16	Coliform	TB/g	85	200*

Baby cucumber – Crop season 1

NO.	Criteria	Result	MRL
1	Abamectin	KPH	(0,02)
2	Benomyl	KPH	(0,02)
3	Chlorpyrifos	KPH	(0,1)
4	Cypermethrine	KPH	(0,05)
5	Metalaxyl	KPH	(0,5)
6	Deltamethrin	KPH	(0,5)
7	Arsen (As)	mg/kg	0,152
8	Cadimi (Cd)	mg/kg	0,014
9	Đồng (Cu)	mg/kg	0,70
10	Thủy ngân (Hg)	mg/kg	0,006
11	Chì (Pb)	mg/kg	0,061
12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	135
13	Salmonella	TB/g	KPH
14	E.coli	TB/g	KPH
15	Coliform	TB/g	90

Baby cucumber – Crop season 2

NO.	Criteria	Result	MRL
1	Abamectin	KPH	(0,02)
2	Benomyl	KPH	(0,02)
3	Chlorpyrifos	KPH	(0,1)
4	Cypermethrine	0,03008	(0,05)
5	Metalaxyl	KPH	(0,5)
6	Deltamethrin	KPH	(0,5)
7	Arsen (As)	mg/kg	0,0133
8	Cadimi (Cd)	mg/kg	0,0015
9	Đồng (Cu)	mg/kg	0,70
10	Thủy ngân (Hg)	mg/kg	0,006
11	Chì (Pb)	mg/kg	0,061

12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	135	150*
13	Salmonella	TB/g	KPH	0*
14	E.coli	TB/g	KPH	10*
15	Coliform	TB/g	20	200*

19/5 Cooperative – Moc Chau district, Son La province

Off-season Tomato

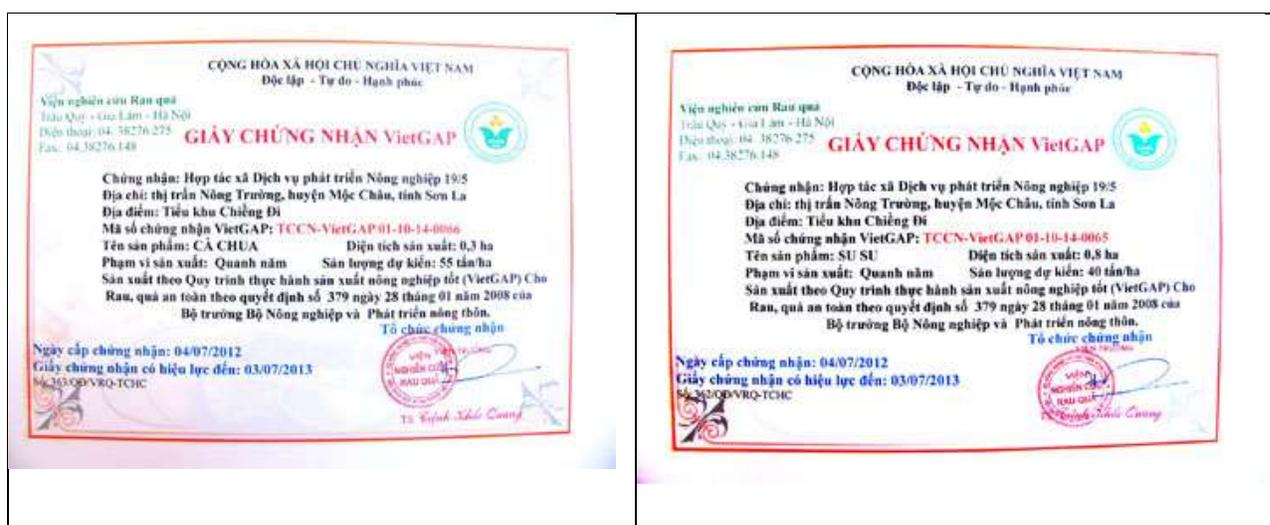
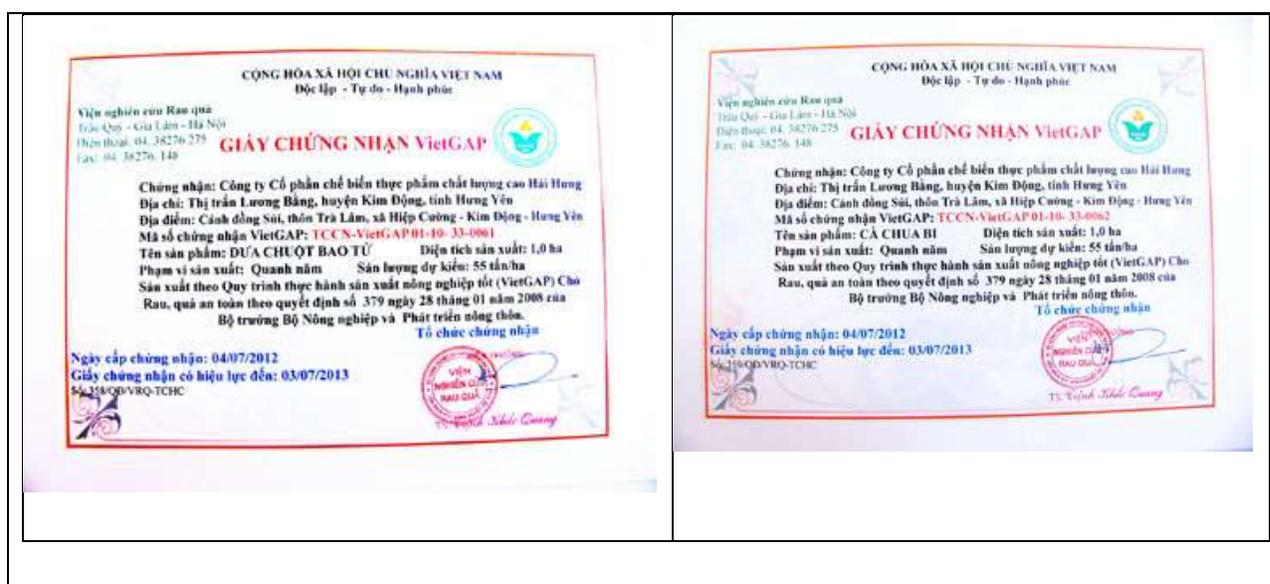
NO.	Criteria		Result	MRL
1	Abamectin		KPH	(0,02)
2	Benomyl		KPH	(0,02)
3	Chlorpyrifos		KPH	(0,1)
4	Cypermethrine		KPH	(0,05)
5	Metalaxyl		KPH	(0,5)
6	Deltamethrin		KPH	(0,5)
7	Arsen (As)	mg/kg	0,120	1,0*
8	Cadimi (Cd)	mg/kg	0,004	0,1*
9	Đồng (Cu)	mg/kg	1,050	30*
10	Thủy ngân (Hg)	mg/kg	0,006	0,05*
11	Chì (Pb)	mg/kg	0,045	0,3*
12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	120	150*
13	Salmonella	TB/g	KPH	0*
14	E.coli	TB/g	KPH	10*
15	Coliform	TB/g	15	200*

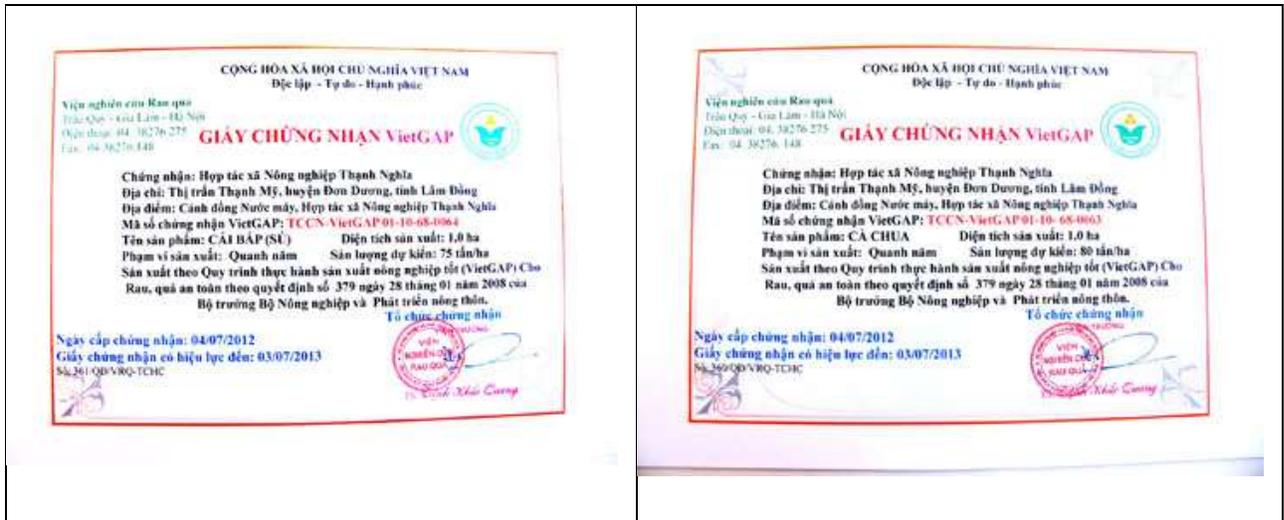
Chayote

NO.	Criteria		Result	MRL
1	Abamectin		KPH	(0,02)
2	Benomyl		KPH	(0,02)
3	Chlorpyrifos		KPH	(0,1)
4	Cypermethrine		KPH	(0,05)
5	Metalaxyl		KPH	(0,5)
6	Deltamethrin		KPH	(0,5)
7	Arsen (As)	mg/kg	0,042	1,0*
8	Cadimi (Cd)	mg/kg	0,002	0,1*
9	Đồng (Cu)	mg/kg	0,046	30*
10	Thủy ngân (Hg)	mg/kg	0,0012	0,05*
11	Chì (Pb)	mg/kg	0,045	0,3*

12	Nitrate (NO <sub>3</sub> <sup>-</sup> )	mg/kg	95	150*
13	Salmonella	TB/g	KPH	0*
14	E.coli	TB/g	KPH	10*
15	Coliform	TB/g	5	200*

From the results of technical guidance, record keeping, regular monitoring the technical production of vegetables in the pilot demonstration field combined with product's data analysis the above monitoring results (including FAVRI staff and group of internal control/supervision of cooperatives, Companies); The documents were submitted to the VietGAP certification organization for issuing VietGAP certificate of the project site.





## Conclusion

There are many factors which contribute to the quality and safety of the commodities. However, in order to sustain the quality and safety of the produce, it is indispensable to establish a quality and safety management system based on regulations and advanced technologies which are appropriate with each target crop, local cultivation conditions, as well as to set up an internal inspection team which is responsible for monitoring, instructing and assisting producers in the whole production process. During the project implementation time, FAVRI staff collaborated with the project sites in initially establishing a system of quality and safety management for vegetables, including establishment of organizational structure, cultivation technique guideline, record-keeping notebooks and other technical materials. Remarkably, the farmers were aware of good agricultural practice through project's training program and actually practiced what they learnt in the pilot demonstration with regular inspection and monitoring from the responsible bodies. All of those contributed to a potential project outcome in which all requirements of VietGAP vegetable production were satisfactorily met.