

**PARTICIPATION ON HERBAL PLANT CONSERVATION  
AND DEVELOPMENT FOR VILLAGE HEALTH  
VOLUNTEERS IN SOONG-NERN DISTRICT,  
NAKHONRATCHASIMA PROVINCE**



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MAHIDOL UNIVERSITY**

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Thesis  
entitled

PARTICIPATION ON HERBAL PLANT CONSERVATION AND  
DEVELOPMENT FOR VILLAGE HEALTH VOLUNTEERS  
IN SOONG-NERN DISTRICT, NAKHONRATCHASIMA  
PROVINCE, THAILAND



*S. Neadgratoke*  
.....  
Miss Sureporn Neadgratoke  
Candidate

*Wee Rawang*  
.....  
Lect. Wee Rawang,  
Ed.D.(Environmental Education)  
Major-Advisor

*P. Pichayapaiboon*  
.....  
Lect. Pattaraboon Pichayapaiboon,  
Ed.D.(Curriculum Instruction)  
Co-Advisor

*[Signature]*  
.....  
Dr. Vichai Chankitiwat,  
Dr.P.H.  
Co-Advisor

*[Signature]*  
.....  
Prof. M.R. Jisuson Svasti, Ph.D.  
Dean  
Faculty of Graduate Studies

*[Signature]*  
.....  
Assoc. Prof. Rachanont Supamongpichate  
Ph.D.  
Chair  
Master of Education Programme in  
Environmental Education  
Faculty of Social Sciences and Humanities

Thesis  
entitled

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PROVINCE, THAILAND

was submitted to the Faculty of Graduate Studies, Mahidol University  
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on  
20 March, 2007

*S. Neadgratoke*

Miss Sureeporn Neadgratoke  
Candidate

*P. Mungeab*

Lect. Panya Mungeab  
Ed.D. (Environmental Education)  
Chair

*Wee Rawang*

Lect. Wee Rawang,  
Ed.D. (Environmental Education)  
Member

*Dr. Vichai Chankitiwat*

Dr. Vichai Chankitiwat,  
Dr. P.H.  
Member

*P. Pichayapaiboon*

Lect. Pattaraboon Pichayapaiboon,  
Ed.D. (Curriculum Instruction)  
Member

*Prof. M.R. Jisnuson Svasti*

Prof. M.R. Jisnuson Svasti, Ph.D.  
Dean  
Faculty of Graduate Studies  
Mahidol University

*Assoc. Prof. Suree Kanjanawong*

Assoc. Prof. Suree Kanjanawong,  
Ph.D.  
Dean  
Faculty of Social Sciences and Humanities  
Mahidol University

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**Sureeporn Neadgratoke**

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SUREEPORN NEADGRATOKE 4537380 SHED/M

M.Ed. (ENVIRONMENTAL EDUCATION)

THESIS ADVISORS: WEE RAWANG, Ed.D., PHATTHARABOON PHITCHAYAPHAIBOON, Ed.D. CURRICULUM INSTRUCTION, VICHAI CHANKITIWAT, Dr.P.H.

ABSTRACT

The objectives of this research were to study factors which correlated with participation of village health volunteers in Soong-Nern district, Nakhonratchasima province, Thailand, in herbal plant conservation and development, and to analyze herbal plant conservation and development methods, and problems, obstacles, and recommendations on participation of the village health volunteers. The sample group consisted of 138 village health volunteers.

The research results found that most of the sample group moderately participated in herbal plant conservation and development. According to analysis of correlation of various factors, participation of village health volunteers in herbal plant conservation and development depended on the factors of being members of the herbal plant conservation promotion group, land occupation ownership, and knowledge, at the significance level of 0.05. Other factors such as sex, age, occupation, educational level, working duration, duration living in the community, receipt of information from Public Health Ministry, and attitudes, did not correlate with participation of village health volunteers in herbal plant conservation and development, at a significance level of 0.05. The herbal plants considerably planted by village health volunteers were lemongrass, galanga, kaffir lime, ivy gourd, turmeric, aloe, and cassumunar. As for more knowledge of herbal plant conservation and development which the sample group wanted, the researcher found that most of the sample group wanted to know benefits and values of herbal plants, precautions, and correct use. As for the research results of participation methods, most of village health volunteers participated in the process while some village health volunteers participated in the product. As for participation model, most of village health volunteers participated in decision making while some of village health volunteers participated in implementation.

Village health volunteers' problems and obstacles to herbal plant conservation and development were as follows: village health volunteers did not know how to use herbal plants; village health volunteers did not see value of herbal plants. Recommendations of the research results are as follows: there should be establishment of a herbal plant conservation promotion group in all villages; village health volunteers should be instilled with knowledge on the value of herbal plants.

KEY WORDS : HERBAL PLANTS / PARTICIPATION / VILLAGE HEALTH VOLUNTEERS / CONSERVATION AND DEVELOPMENT

179 P.

การมีส่วนร่วมในการอนุรักษ์และพัฒนาพืชสมุนไพร ของอาสาสมัครสาธารณสุขประจำหมู่บ้าน ในอำเภอสูงเนิน จังหวัดนครราชสีมา (PARTICIPATION ON HERBAL PLANT CONSERVATION AND DEVELOPMENT FOR VILLAGE HEALTH VOLUNTEERS IN SOONG-NERN DISTRICT, NAKHONRATCHASIMA PROVINCE)

สุรียพร เนียคกระโทก 4537380 SHED/M

ศษ.ม. (สิ่งแวดล้อมศึกษา)

คณะกรรมการควบคุมวิทยานิพนธ์ : วีร์ ระวัง, ศษ.ค., ภัทรบูลย์ พิษขไพบูลย์, Ed.D. curriculum instruction, วิชัย จันทรศักดิ์วัฒน์, Dr.P.H.

บทคัดย่อ

การวิจัยครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่มีความสัมพันธ์กับการมีส่วนร่วมของอาสาสมัครสาธารณสุขประจำหมู่บ้าน ในการอนุรักษ์และพัฒนาพืชสมุนไพร ในอำเภอสูงเนิน จังหวัดนครราชสีมา วิเคราะห์วิธีการอนุรักษ์และพัฒนาพืชสมุนไพร ตลอดจนศึกษาสภาพปัญหา อุปสรรค และข้อเสนอแนะ ในการมีส่วนร่วมของอาสาสมัครสาธารณสุขประจำหมู่บ้านในการอนุรักษ์และพัฒนาพืชสมุนไพร ในอำเภอสูงเนิน จังหวัดนครราชสีมา จากกลุ่มตัวอย่างจำนวน 138 ราย ดำเนินการเก็บรวบรวมข้อมูลโดยใช้แบบสัมภาษณ์ และทำการวิเคราะห์ข้อมูลโดยใช้โปรแกรมสำเร็จรูปทางสังคมศาสตร์ SPSS ค่าสถิติที่ใช้ ได้แก่ ร้อยละ ฐานนิยม ค่าสถิติ ไค-สแควร์ และค่าสถิติ Pearson Product Moment Correlation Coefficient

ผลการศึกษาพบว่า กลุ่มตัวอย่างส่วนใหญ่มีส่วนร่วมในการอนุรักษ์และพัฒนาพืชสมุนไพร อยู่ในระดับปานกลาง เมื่อวิเคราะห์ความสัมพันธ์ระหว่างปัจจัยต่างๆ พบว่า การมีส่วนร่วม ในการอนุรักษ์และพัฒนาพืชสมุนไพรของอาสาสมัครสาธารณสุขประจำหมู่บ้านขึ้นอยู่กับความเป็นสมาชิกกลุ่มส่งเสริม อนุรักษ์พืชสมุนไพร กรมสิทธิการถือครองที่ดิน และความรู้ อย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05 ส่วนปัจจัยอื่นๆ ซึ่งได้แก่ เพศ อายุ อาชีพ ระดับการศึกษา ระยะเวลาในการเป็นอาสาสมัครสาธารณสุขประจำหมู่บ้าน ระยะเวลาที่อาศัยอยู่ในชุมชน การได้รับข่าวสารจากกระทรวงสาธารณสุข ทักษะคิด ไม่ขึ้นอยู่กับการมีส่วนร่วมในการอนุรักษ์และพัฒนาพืชสมุนไพรของอาสาสมัครสาธารณสุขประจำหมู่บ้าน อย่างมีนัยสำคัญทางสถิติที่ระดับ 0.05 พืชสมุนไพรที่พบว่าอาสาสมัครสาธารณสุขประจำหมู่บ้านมีการปลูกมากที่สุดได้แก่ ตะไคร้ ข่า มะกรูด ตำลึง ขมิ้นชัน ว่านหางจระเข้ ใพล ในด้านของความรู้เรื่องการอนุรักษ์และพัฒนาพืชสมุนไพรที่กลุ่มตัวอย่างต้องการเพิ่มเติม พบว่ากลุ่มตัวอย่างส่วนใหญ่ ต้องการรู้สรรพคุณ คุณค่าของพืชสมุนไพร ข้อควรระวังและวิธีการใช้ที่ถูกต้อง ผลการศึกษาด้านวิธีการมีส่วนร่วม อาสาสมัครสาธารณสุขประจำหมู่บ้านส่วนใหญ่ มีส่วนร่วมในกระบวนการ รongลงมา คือ ร่วมในผลที่เกิดขึ้น ในส่วนรูปแบบการมีส่วนร่วม พบว่า ส่วนใหญ่มีส่วนร่วมในการตัดสินใจ และร่วมปฏิบัติการ สภาพปัญหา และอุปสรรค ของอาสาสมัครสาธารณสุขประจำหมู่บ้านในการอนุรักษ์และพัฒนาพืชสมุนไพร ได้แก่ การไม่มีความรู้ในการใช้พืชสมุนไพร ไม่เห็นคุณค่า ข้อเสนอแนะจากผลการวิจัย คือ ควรมีการจัดตั้งกลุ่มส่งเสริม อนุรักษ์พืชสมุนไพรในหมู่บ้าน ควรปลูกฝังให้รู้คุณค่าของพืชสมุนไพร

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The image features a large, semi-transparent watermark of the Mahidol University logo. The logo is circular, with a gold outer ring containing the university's name in Thai script. Inside the ring is a blue circle with a gold emblem of a traditional Thai stupa (chedi) and other religious symbols. The watermark is centered on the page and partially overlaps the table content.

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The image contains a large, semi-transparent watermark of the Mahidol University logo. The logo is circular with a gold border. Inside the border, there is a blue circle containing a golden stupa-like structure. The Thai text 'มหาวิทยาลัยมหิดล' (Mahidol University) is written in gold around the inner circle, and 'ว.ป.ม.' (W.P.M.) is written at the top right. There are also two golden floral motifs on the left and right sides of the inner circle.

## CHAPTER 1

### INTRODUCTION

#### 1.1 Background and Significance of Problems

Herbal plants involve and are very important to humans' way of life. From the past to the present time, herbal plants have been used in caring health and being medicine, food, and cosmetic. Herbal plants are valuable to the ecosystem and involve way of life, religion, ritual, and local tradition. There is use of herbal plants in the forest, plantation, farm, garden, and agricultural community. Use of herbal plants has been developed up to the present time (Yos Santasombat, 1999 : 244). At present, there are economic and technological progresses in the society. Therefore, humans more considerably develop models and methods of using herbal plants such as medicinal product, cosmetic product, pest elimination and prevention products. As herbal plant products are developed, they are exported to the world market for sale. In 2000, the United States of America totally purchased herbal products about 200 million baht. The exported products were kariyat, citronella grass. As herbal plant product export promotion is an increase in the country's revenue, the exported herbal plant products must be safe, standard, and acceptable. As herbal plants are more considerably used, some kinds of herbal plants decrease, are rare, and are insufficient for use. Therefore, it is necessary to plant more herbal plants (Office of National Research Committee, 2002–2006:72), correctly use, preserve, and develop for sustainable use of herbal plants.

There are several advantages of using herbs such as saving, increasing the country's revenues, being suitable for people in the remote area where transport is not convenient, and reducing purchase of foreign medicine. Therefore, the Thai government realizes value of herbs and determines the policy of promoting use of

herbs in the Public Health Development Plan No. 5 by combining with the basic health service work. During 1984-1986, the Ministry of Public Health organized a pilot project called the project of basic health service making use of traditional medicinal herbs in 25 provinces under assistance of UNICEF Organization. There was important implementation of herbs in 7 aspects: information, training, dissemination and public relations, study and research, plant varieties distribution and planting, medicinal product distribution and production, and result follow-up. Performance of the project of basic health service making use of traditional medicinal herbs brought about wide interest in herbs. Some community hospitals and health centers such as Bamnetnarong Hospital, Chaiyaphum Province and Sangkhom Hospital, Nongkhai Province provided the health service by using herbal plants which are beneficial and safe to patients. This brought about serious use of herbs and made people in the community like herbs more considerably.

Therefore, the Ministry of Public Health in cooperation with German Agency for Technical Cooperation or GTZ organized the project of basic health service making use of traditional medicinal herbs with the implementation period of 3 years (during 1985-1988). The responsible agency was the Office of Basic Health Service Committee, Office of the Permanent Secretary, Ministry of Public Health under technical support from the Faculty of Pharmaceutical Science, Mahidol University and Medical Research Division, Department of Medical Science. Such project emphasized use of herbs in the health service center of the government and the community in 5 provinces: Prachinburi, Phitsanulok, Nakhonratchasima, Khonkaen, and Nakhon Si Thammarat in 5 community hospitals, 7 health centers, and 100 villages. Such hospitals were Wang Nam Yen Hospital, Wang Nam Yen District, Prachinburi Province, Bang Kra Thum Hospital, Bang Kra Thum District, Phitsanulok Province, Soong-Nern Hospital, Soong-Nern District, Nakhonratchasima Province, Phon Hospital, Phon District, Khon Kaen Province, and Thung Song Hospital, Thung Song District, Nakhon Si Thammarat Province (Wandee Kritsanaphan, 1995 : 40-41).

Soong-Nern Hospital, Soong-Nern District, Nakhonratchasima Province, which was a target area of the project of basic health service making use of traditional medicinal herbs, developed herbal plants in 1982. Initially, personnel in hospital were interested in self care by natural therapy, used herbs to treat patients, began producing and using herbs in hospital, brought this concept into the community, indicated danger of using unsuitable medicine, and more clearly organized responsibility system. At the end of 1984, Soong-Nern Hospital was selected to participate in GTZ's project of basic health service making use of traditional medicinal herbs. As for Thai traditional medicine and herb development from 1982 to the present time, the hospital has already done the following activities;

1. Disseminate, make public relations, train to give knowledge, and exchange experience of herbs and Thai traditional medicine to village health volunteers, people in the village, and students.
2. Take people in the village and the interested people to the mountain to study herbal plant varieties.
3. Take people in the village to make a study tour of herbs and basic health service.
4. Establish a group interested in herbs and continuously implement.
5. Organize the training of Thai massage to the interested people in Soong-Nern District.
6. Encourage people in the village to plant and use herbs for being the raw-material source for the hospital. This increases people's income.
7. Be the herbal medicine production source and control quality.
8. Establish a clinic providing treatment service with Thai traditional medicine by physicians and modern medicine.
9. Sell herbal medicine and disseminate herbal knowledge.
10. Participate in GTZ's project of basic health service making use of traditional medicinal herbs (Fund supported by Germany) during 1985-1988 (Thai Traditional Medicine Committee, Soong-Nern Hospital, Nakhonratchasima Province, 1991 : 1-2).

At present, the society is interested and more considerably uses Thai traditional medicine way such as use of herbal medicine and Thai massage. The Ministry of Public Health more clearly determines Thai traditional medicine promotion and guidelines. In 1998, community hospitals in Nakhonratchasima Province jointly organized activities of campaigning Thai traditional medicine and herbal plants (Soong-Nern Hospital, Nakhonratchasima Province, Ministry of Public Health, 1999 : 24). At present, Soong-Nern Hospital does activities of Thai traditional medicine and herbs as follows; providing service of treating patients with herbal medicine and Thai massage, selling herbal medicine, developing medicine production system to be standard, promoting herbal water drinking and local vegetables, opening the service of herbal steam, collecting herbal plant varieties for being a demonstration garden and selling herbal plant varieties, being technical source by the service of Thai traditional medicine library. Therefore, Soong-Nern Hospital, Nakhonratchasima Province continuously implements according to the project of basic health service making use of traditional medicinal herbs.

Such basic health service work occurs by producing villagers as village health reporters and village health volunteers for being the centre of participation of people in caring health of themselves, family, and the community. These volunteers are trained to have knowledge and ability in helping and solving health problems frequently found in the community. Village health reporters and village health volunteers have important roles in helping, supporting, and stimulating people to have good behaviors. Health officers support and encourage such implementation to cover basic health service activities. At present, village health reporters have received more training and are upgraded as village health volunteers. Therefore, people considerably participate in implementing the project of basic health service making use of traditional medicinal herbs, represented by village health volunteers. At present, there are village health volunteers in every village throughout the country.

The country's environmental education development policy encourages people to produce and clearly use resources. For keeping natural balance, the policy

creates conscience of people to see value and realize environmental conservation by emphasizing people's participation and mixing several aspects of development (Winai Weerawatthanant and others, 1997:63 ) for sustainable use of existing natural resources by efficiently using and causing least damages. As people in Soong-Nern district, Nakhonratchasima Province use herbal plants for several benefits such as making as herbal products for use in family and selling, these herbal plants decrease and may not be sufficient for future use if there is no more planting and correct use and care. Therefore, it is necessary to conserve and develop herbal plants which are valuable resources for sustainable use. Herbal plant conservation and development must depend on participation of people in implementation for extending a network for people (Suphanee Rungruangsi, 1992 : 28). Village health volunteers are important representatives to receive the training of herbal plant knowledge and disseminate such knowledge to people in the villages. Therefore, village health volunteers are important people to participate on herbal plant conservation and development.

Therefore, the researcher was interested to do a research on participation on herbal plant conservation and development for village health volunteers. And the researcher was interested to conserve and develop herbal plants in order to collect data on the locality's herbal plant conservation and development which would be beneficial to environmental education and be data on pharmaceutical science and agriculture, and promote herbal plant conservation and development.

The studied area was Soong-Nern District, Nakhonratchasima Province because there has been herbal plant promotion according to the project of basic health service making use of traditional medicinal herbs and there has been continuous implementation on herbal plants up to the present time. The researcher purposively selected the studied areas consisting of 3 sub-districts: Kud Jik Sub-district, Ma Klua Mai Sub-district, Sema Sub-district in Soong-Nern District, Nakhonratchasima Province because there is treatment by Thai traditional medicine and modern medicine by using herbal plants and selling herbal plant products. Villagers and

village health volunteers produce herbal medicine and herbal cosmetics for selling in the Thai Traditional Medicine Centre situated in the sub-district's health centre. The conducted research will be beneficial to village health volunteers in other areas and be a guideline of herbal plant conservation and development.

## 1.2 Research Objectives

The objective of this research was to study participation level on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province. Specific objectives of this research were as follows;

1. To study factors correlating with participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province.
2. To analyze herbal plant conservation and development methods of village health volunteers in Soong-Nern district, Nakhonratchasima province.
3. To study problems, obstacles, and recommendations on participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province.

## 1.3 Research Questions

1. How much do village health volunteers in Soong-Nern district, Nakhonratchasima province participate in herbal plant conservation and development? What factors correlate with participation?

2. How do village health volunteers in Soong-Nern district, Nakhonratchasima province conserve and develop herbal plants?

3. What problems, obstacles, and recommendations affect participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province?

#### **1.4 Research Scope**

The researcher wanted to study participation on herbal plant conservation and development for village health volunteers working in the community basic health service centre in Soong-Nern district, Nakhonratchasima province. The researcher collected data as follows;

1. Collect quantitative data from 180 village health volunteers who are the sample group divided to be 46 volunteers being under responsibility of the Kud Jik health centre, Kud Jik sub-district, 71 volunteers being under responsibility of the Ma Klua Mai health centre, Ma Klua Mai sub-district, and 63 volunteers being under responsibility of the Hin Tang health centre, Sema sub-district.

2. Collect qualitative data from village health volunteers and health officers totaling 12 people from 3 health centers.

The researcher selected 3 sub-districts consisting of Kud Jik sub-district, Ma Klua Mai sub-district, and Sema sub-district in Soong-Nern district, Nakhonratchasima province as the studied areas by purposive random because there is treatment with Thai traditional medicine using herbal plants and there is sale of herbal products in these areas.

## 1.5 Research Definitions

1. **Herbal plant** means kinds and various parts of plants which the informants use for being medicine, food, cosmetics, strengthening health, and eliminating pests.

2. **Herbal plant conservation** means activities done by the informants to make herbal plants exist in the locality in the future such as replacement planting, caring, encouraging herbal plant knowledge, and establishing a group of promoting herbal plant implementation.

3. **Herbal plant development** means activities done by the informants to make herbal plants valuable, efficient, and safe such as making herbal plant products for use in the family or sale and using knowledge and technology of herbal plants to improve planting, picking, and distributing plant varieties.

4. **Participation on herbal plant conservation and development** means the informants' activities of participating on herbal plant conservation and development in the locality.

5. **Village health volunteers** mean people selected by local people to care people's health (a village health volunteer per people in 8-15 households). Village health volunteers work in the community basic health service centre in Soong-Nern district, Nakhonratchasima province.

6. **Basic Health Service** means activities of preventing disease, promoting health, treating disease, and rehabilitating health by local people in Soong-Nern district, Nakhonratchasima province.

7. **Community Basic Health Service Centre** means a place where villagers in Soong-Nern district, Nakhonratchasima province jointly establish in the

village for managing community basic health service. Village health volunteers rotate to work in this centre to provide health service according to the group's agreement. It is the centre of working together in order to enable people to take care of themselves. There is the community basic health service centre in each village in every area of the country.

**8. Thai traditional medicine** means people's self care methods by using humor theory, astrology theory, and superstitious belief to diagnose disease and using herbs to treat disease. Village health volunteers in Soong-Nern district, Nakhonratchasima province provide the service of caring health with Thai traditional medicine in the Thai Traditional Medicine Centre by charging the service such as massaging by using herbs, herbal hot compressing, and herbal steaming.

**9. Knowledge of herbal plant conservation and development** means knowledge of herbal plant conservation and development of village health volunteers in Soong-Nern district, Nakhonratchasima province.

**10. Attitude toward herbal plant conservation and development** means belief of the informants to efficiently and safely use herbal plants as much as possible in the longest period.

**11. Duration living in the community** means number of years which the informants live in this community from the beginning to the present time.

**12. Receipt of information** means number of times per year which the informants receive the training of herbal plant conservation and development.

**13. Working duration of village health volunteers** means number of years which village health volunteers have worked from the beginning to the present time.

**14. Occupied area size** means number of plantation which the informants own the land for agriculture.

**15. Support from the organizations outside the community** means type and frequency in organizing activities of promoting conservation and development of herbal plants in the community by related agencies such as Soong-Nern District Health Office, Soong-Nern Hospital, Soong-Nern District Agricultural Office.

**16. Membership of herbal plant conservation and development group** means the informants' status on membership of the project, group, and association implementing herbal plant conservation and development such as members of the Thai Traditional Medicine Centre, local food development group.

## **1.6 Research Benefits**

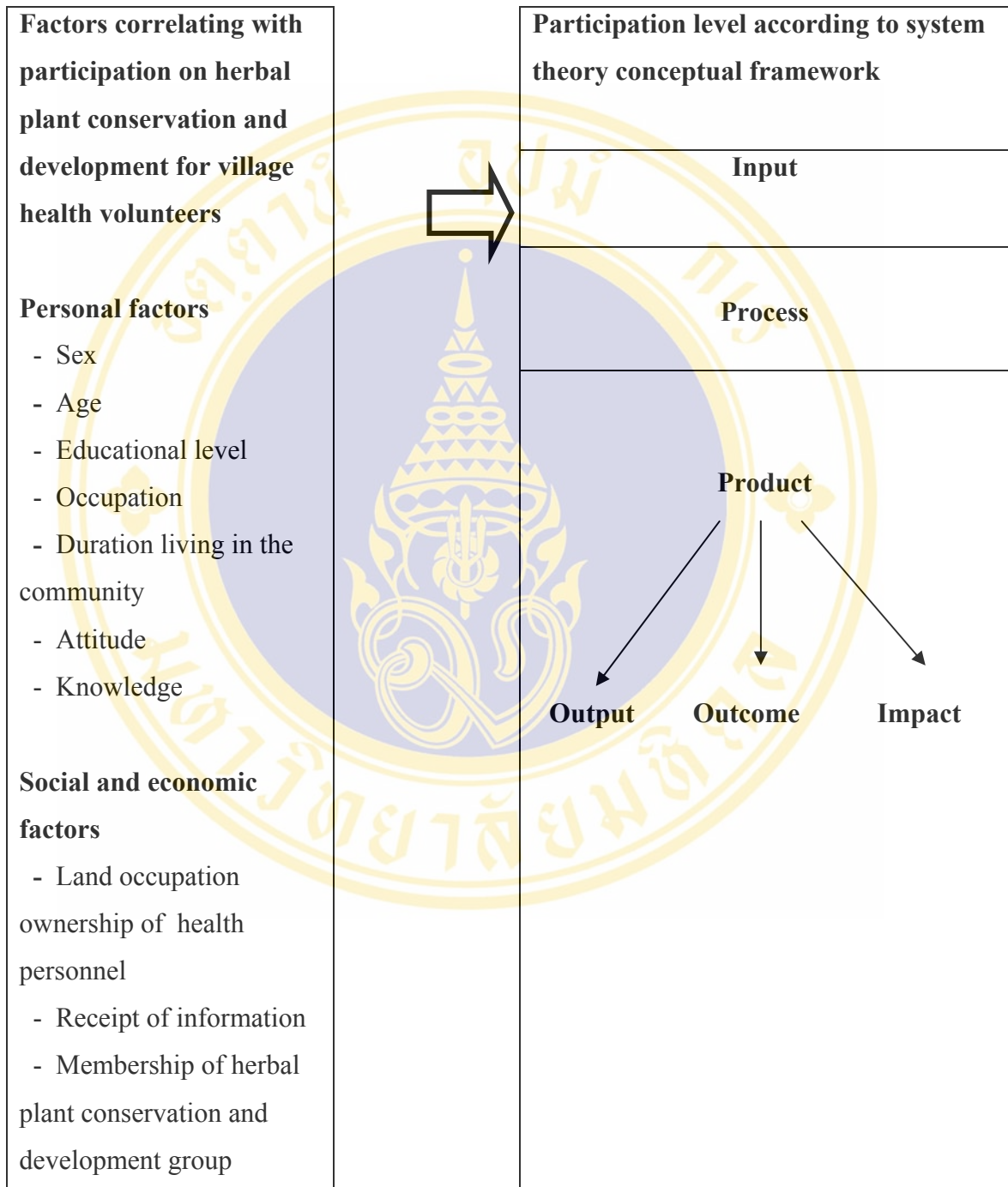
1. To know that how much village health volunteers in Soong-Nern district, Nakhonratchasima province participate on herbal plant conservation and development and what factors involve.

2. Herbal plant conservation and development of village health volunteers in Soong-Nern district, Nakhonratchasima province can be a source of studying herbal plant knowledge for people, students, and the interested people.

3. To be the herbal plant conservation and development guidelines of village health volunteers in other district.

4. Related agencies can consider factors affecting participation on herbal plant conservation and development for village health volunteers and use as a guideline of planning local development.

### 1.7 Research Conceptual Framework



**Chart 1-1 :** Research conceptual framework

This research conceptual framework studied factors correlating with participation on herbal plant conservation and development for village health volunteers, participation level according to system theory conceptual framework, and participation methods. The components involving this study according to this chart could be explained as follows;

### **1. Factors correlating with participation on herbal plant conservation and development for village health volunteers**

The researcher studied factors correlating with participation on herbal plant conservation and development for village health volunteers by finding correlation between independent variables and dependent variables as follows;

- How much does knowledge of herbal plant conservation and development correlate with participation on herbal plant conservation and development for village health volunteers?
- How much does membership of herbal plant conservation and development group correlate with participation on herbal plant conservation and development for village health volunteers?

**Independent variables** are as follows;

**Personal factors** are sex, age, educational level, occupation, duration living in the community, working duration of village health volunteers, attitude toward herbal plant conservation and development, knowledge of herbal plant conservation and development.

**Social and economic factors** are income, occupied area size, receipt of information on herbal plant conservation and development, dissemination of knowledge from ancestors or neighbors, support from the organizations outside the community, membership of herbal plant conservation and development group such as membership of the Thai Traditional Medicine Centre.

**Dependent variables** comprise participation on herbal plant conservation and development for village health volunteers

## **2. Participation level according to the system theory conceptual framework**

The researcher studied participation level on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province according to the system theory concept in order to know that how much village health volunteers involved components of herbal plant conservation and development such as input, process, and product. The researcher studied the following factors;

Input involves participation on herbal plant conservation and development for village health volunteers and consists of management basic factor (4' Ms) as follows;

1. Man means village health volunteers who may be members of the Thai Traditional Medicine Centre.
2. Management means methods for implementation of herbal plant conservation and development such as organizing the training for village health volunteers, planning of the Thai Traditional Medicine Centre Committee and members, establishing herbal plant work group.
3. Materials mean kinds and parts of herbal plants which village health volunteers' plant in Soong-Nern District. These herbal plants are made as herbal products for use and sale and equipment materials used in conserving and developing herbal plants such as lemongrass, cassumunar, and related documents.
4. Money means village health volunteers' investment in planting herbal plants and making herbal products by using money or labor.

Process means implementation activity or process for participation on herbal plant conservation and development for village health volunteers such as planting herbs, building herbal gardens, caring herbal plants, producing and selling herbal plant products, and providing the service of herbal steaming.

Product means total products stemming from implementation for participation on herbal plant conservation and development for village health volunteers and consisting of output, income, impact with definitions as follows;

Output means output which occurs. For example, the community more considerably plants herbal plants and continuously conserves herbal plants.

Outcome means income which occurs such as income from selling herbal plant products.

Impact means impact which occurs. For example, there is unity in the community, which helps indicate community's needs. People's more realization of natural value brings about conservation group.

Components of participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province according to the system theory concept can be used for studying participation level on herbal plant conservation and development for village health volunteers such as where village health volunteers build the herbal gardens, what they plant, and what herbal plant products the village health volunteers make.

The researcher studied components of participation on herbal plant conservation and development for village health volunteers, which are a part of the organization system. The research conceptual framework studied factors of participation in implementation for achievement of objectives of the community organization according to the system theory. Therefore, the organization behavior according to this conceptual framework was a factor of studying participation on herbal plant conservation and development for village health volunteers.

## CHAPTER 2

### LITERATURE REVIEW

The researcher studied participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province through data, documents, and related researches as follows;

- 2.1 Concepts and theories of participation
- 2.2 The study of environmental education
- 2.3 The study of basic health service
- 2.4 Village health volunteers
- 2.5 The study of herbal plants
- 2.6 Concepts of herbal plant conservation and development
- 2.7 Related researches and documents
- 2.8 Research variables

#### **2.1 Concepts and Theories of Participation**

##### **2.1.1 Definition of participation**

Research Institute Foundation for Thailand Development (1995:2) defined that participation on rural development is participation of community stakeholders or people in implementing the government's development work or the community's development activities which people are pleased to participate, and participation of men and women in the village. For participation, all members jointly receive benefits invest, and work. It, therefore, is fair participation.

International Labor Office of the United Nations (1971:7) defined that participation is cooperation, participation in something, and responsibility.

Thaweethong Hongwiwat (1984:2) defined that people's participation is people's or community's development of their ability in managing and controlling use and distribution of resources and production factor existing in the society for the benefit of earning their living on economic and social aspects according to necessity as members. As for participation, people develop perception and wisdom by making decision in determining their lives.

Amnart Anantachai (1984:138) defined that development by participation helps improve work efficiency and effectiveness, efficiency of agency with structure, policy, implementation by using technical knowledge to achieve the goals by the best method in the internal and external environments and quality of people in the agency.

Phairoj Suksamrit (1988:9) mentioned people's participation by referring the definition given by the United Nations Organization as follows;

1. People's participation in the organization benefits
2. People's participation in helping perform duties according to the project
3. People's participation in making decision throughout the process.

People's participation is divided into 7 levels as follows;

- |  |   |                        |
|--|---|------------------------|
| Level 1. People are compelled.   | = | No participation       |
| Level 2. People are enticed  | = | Little participation   |
| Level 3. People are persuaded  | = | Little participation   |
| Level 4. People's needs are  | = | Moderate participation |
|  |   | Interviewed            |
| Level 5. People have an opportunity<br>to express opinion                | = | Moderate participation |
| Level 6. People have an opportunity<br>to present a project              | = | High participation     |
| Level 7. People have an opportunity<br>to make decision by<br>themselves | = | Ideal participation    |

Yuwat Wutthimethee (1983:20) defined that participation is opening an opportunity for people to participate in thinking, initiating, considering, making decision, practicing, and being responsible for various issues which impact on people themselves and bring about people's better existence condition. Changers must accept rural development philosophy that every human wants to happily stay with other people, receive fair practice, be acceptable to other people, and be ready to dedicate themselves for the community activities. Meanwhile, humans can develop if they have an opportunity and are correctly suggested.

Phairat Techarin (1984:6-7) gave the important principles and defined that the policy on participation of the community in development is a process which the government promotes, induces, supports, and creates an opportunity for people in the community such as individuals, crowd, association, club, foundation, and various volunteer organizations to participate in implementing an issue or several issues for achievement of objectives and development policy as specified.

Erwin (1976:138) gave the concept of definition of participation that development by participation is a process making people participate in developing, thinking, making decision in solving their problems by emphasizing people's participation in using creative idea, supporting, and following up performance of the organization and related officers.

Pearse and Stiefel (1979:48) defined that people's participation is people's increase in ability in controlling various institutes and resources according to the existing social condition.

In conclusion, people's participation is people's opportunity in jointly working or joining in various activities to develop quality of life of each person and the society to have suitable and better existence. People's participation may be in the form of individual, crowd, various models of volunteers including village health volunteers who participate in developing people's quality of life.

## 2.1.2 Theory of participation

### 1. System Theory

System theory (Siriwan Sereerat and others, 1994:334-338) is defined as follows;

1. Perspective of business organization as the centre of sub-agencies which jointly implement and affect outside environments.
2. Extension of human resource concept which explains the open system by independent cooperation of the subsystem.

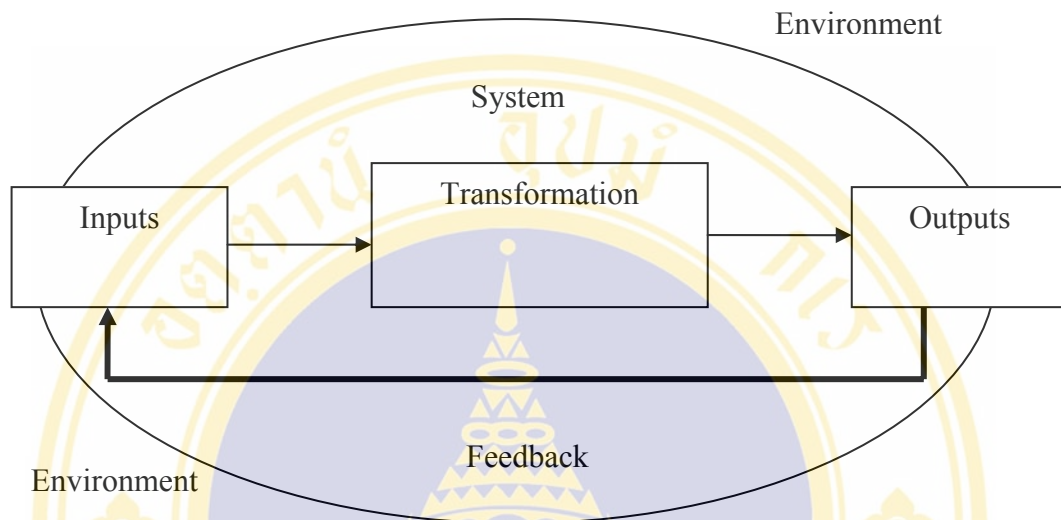
System is defined as follows;

1. Independent components assemble for any objectives.
2. Classification of various parts which mutually correlate to be the big group for achievement of the organization objectives.
3. A number of various parts which mutually correlate and depend on each other for successfully doing something as required.

System approach or system approach to management is defined as follows;

1. Study of working system starting from transformation of production factor which is input by bringing about input feedback which is influenced by the internal and external environments
2. Management methods by general system theory (theory for understanding system operation
3. Concept of organization or business operation which implements according to steps which can stipulate details and forecast outcome
4. 7 steps problem-solving methods consist of (1) stipulation of main problems (2) collection of data (3) stipulation of various alternatives (4) evaluation of alternatives (5) selection of the best alternative (6) practice of the best alternative and (7) efficient follow-up and evaluation of problem- solving.

5. Theory which considers transformation for survival under a surrounding situation of the organization as shown in the following picture;



**Picture 2-1 :** System approach

**System Four**

System Four is Likert's organizing by emphasizing human, emphasizing every level of independent communication, and supporting employees (System 4 is different from system 1). Leadership principles consist of 4 systems as follows;

System 1 **Dictatorship:** original decision making and searching techniques for use.

System 2 **Kind dictatorship:** decision making structure without searching for use.

System 3 **Counsel:** counseling and friendly atmosphere in making decision without unanimity.

System 4 **Participation:** unanimous creation of a team and techniques of team members' participation.

Participation on herbal plant conservation and development for village health volunteers is consistent with the system theory in working system, problem solving, and use of organization employees' participation techniques.

## **2. Theory of social psychology**

Maslow (1970:90) researched about motivation of human's action and explained human's behavior of basic need stemming from satisfaction. Hierarchy of needs is limited from lowest to highest. If needs occur without being sufficiently met, those needs still exist and are the driving force which stimulates people to meet those needs.

Maslow explained that 5 basic needs which make people express various behaviors are as follows;

1. Physiological need is the first need.
2. Safety need
3. Love need
4. Esteem need
5. Self-actualization need

In conclusion, humans' basic needs stemming from humans' satisfaction stimulate humans to participate in doing various activities. Therefore, need for using herbal plants is a basic factor used by the researcher in this research.

## **3. Communication theory**

Roger (1973:45) mentioned correlation between receipt of new things and communication process that people's receipt of new things depends on communication, communication channel, and factors of personal characteristics as follows;

1. Factors of personal characteristics are people's age, social status, economic status which includes income, land size, land occupation, and specific ability which includes educational level.

2. Communication channel, knowledge or communication process which consists of commander, information source, information, communication channel, and information receiver.

Communication channel is a method which a person communicates information to the information receiver and can be divided into 2 characteristics as follows;

1. Mass media channel is a method of releasing information on mass media such as newspaper, magazine, journal, or other printed materials and consists of movie, radio, television.

2. Interpersonal communication channel is interpersonal communication for releasing information between information sender and information receiver.

Roger (1973) also said that mass media have important roles in increasing knowledge and disseminating information and can adjust people's attitude. And personal media more considerably influence change of people's attitude.

Communication process influences an increase in knowledge and can adjust people's attitude which makes people have more knowledge and understanding, realize, and more considerably participate in various activities of the community.

As for the theory of participation involving this research, after consideration of participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province, the researcher found that these volunteers implemented activities by having production factor (input), herbal plant transformation, and product, which was consistent with

the system theory. Therefore, the researcher used guidelines of this theory for this study.

### 2.1.3 Models and steps of participation

Cohen and Uphoff (1980:219-222) divided participation into 4 models as follows;

1. Decision making participation consists of 3 steps: starting decision making, implementing decision making, and making decision to work.
2. Implementation participation consists of resource support, administration, and coordination.
3. Benefits participation consists of material benefits, social benefits, or personal benefits.
4. Evaluation participation.

Cary (1976:144) divided participation into 5 models as follows;

1. Membership
2. Membership on attendance at meetings
3. Membership on financial contribution
4. Membership on committee
5. Position of leadership

Cary divided participants into 3 types as follows;

1. Actor
2. Recipient
3. Public

Phairat Techarin (1984:212-213) said that steps of participation in implementation for achievement of objectives and development policy as specified are as follows;

1. Participate in studying problems, cause of problems, and needs of the community.
2. Participate in searching and creating models and methods of development for solving and reducing problems or creating new things which are beneficial to the community or meet the need of the community.
3. Participate in setting the policy or plan or project or activity for eliminating and solving problems and meeting the needs of the community.
4. Participate in making decision in using limited resources for the common benefits.
5. Participate in organizing or improving development management system to have efficiency and effectiveness.
6. Participate in investing in the community project activities according to ability of themselves and agencies.
7. Participate in following the policy, plan, project and activities according to the specified goal.
8. Participate in controlling, following up, evaluating, and maintaining projects and activities done by the private sector and the government sector for sustainable use.

Participation steps and models involving participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province are decision making participation, implementation participation, benefit participation, evaluation participation, participation in making decision and planning activities for use of the existing herbal plants, membership on attendance at the meeting of the herbal plant conservation and development project. These related steps and models will be used in this research.

#### **2.1.4 Factors affecting participation**

Alwin Bertrand (1958:147-157) said that people's cultural factor correlating with participation is personal characteristics comprising

1. Age
2. Sex
3. Social status

Reeder (1974:39) said that social action consists of several factors and explained that people's reason of doing anything depends on several factors called believes or disbelieves. And Reeder said that human's action depends on the following factors;

1. Goal
2. Believes orientation
3. Standard values
4. Habit and custom
5. Expectation
6. Commitments
7. Reinforcement
8. Opportunity
9. Ability
10. Support

Pratchya Wesarat (1985:170) said that important factors which stimulate people to participate in activities are as follows;

1. Factor of physical, economic, social, political, administrative environments and safety
2. Factors which are stimulated from other people, especially leaders such as sub-district head, village head
3. Factors which are remuneration are labor remuneration, dividend from saving co-operative
4. Personal internal factors are expectation of common benefits, being considerate without refusing persuasion or feeling that it is necessary to participate for unity.

Phatthaya Saihoo (1986:246) mentioned factors being important and affecting participation in activities implemented in the community. Success of the community development project depends on the following factors;

1. Factors which are characteristics of the project
2. Factors which are characteristics of villagers
3. Official factors such as being considered as the important project, having enough budgets, being supported by technical officers
4. Factors which are components such as convenient transport, enough materials, and good economy of the villages

Cohen & Uphoff (1977:17-18) presented participation context that the study of participation must think of the following environmental factors which have considerable complication;

1. Biological and physical factors
2. Economic factors
3. Political factors
4. Cultural factors
5. Historical factors

Moreover, Cohen & Uphoff said that 4 parties which have significant roles in participating in the rural environment development project are local people, local leader, public authorities, and outside people. For people's participation, several factors involving participation are as follows;

1. Age and sex
2. Status in the society
3. Educational level
4. Social status
5. Occupation
6. Income and asset
7. Duration living in the community
8. Occupied area and working condition

According to the study of concepts and theories of participation and factors of participation, people's participation involves the following factors;

1. Personal factors are sex, age, occupation, educational level, working duration, duration living in the community, knowledge, and attitude.
2. Social and economic factors are income, receipt of information on herbal plant conservation and development, occupied area size, membership of herbal plant conservation and development group.

## **2.2 The Study of Environmental Education**

### **2.2.1 Definition of environmental education**

- Several people defined environmental education as follows;

Bernard (1982:8) defined that environmental education is a process of developing populations in the following issues;

1. Knowledge of living things and physical and social environments, and culture
2. Realization of the problems for seeking problem solving guidelines
3. Motivating people to create behavior responsible for environments for good quality of life

According to IUCN – National Resources Commission of Education International Working Meeting on Environmental Education in the School Curriculum at Paris, France in 1970, UNESCO (1977:75) defined that environmental education is a process of accepting value and developing concepts for development of skills and attitudes, and environments and human's culture which involve decision making and determination of behavior for environmental quality.

Phichate Srimek (1985:44) defined that environmental education is educational process which makes learners have knowledge and understanding of

correlation between humans and environments for development of skills and attitudes in order to bring about realization of environments and environmental problems and impact on human's quality of life.

Winai Weerawatthanant (1996:15) defined that environmental education is educational process which emphasizes knowledge of physical environment and social environment, concrete and abstract factors which cause environmental changes and impacts on humans for creating attitude, behavior, and values of maintaining or developing environmental quality, quality of life of oneself and humans in general.

In conclusion, environmental education is the study of environments and is a process of creating knowledge, thought, realization, responsibility, and suitable practices on environments and resources for people to realize, apply, develop, and preserve environments for quality living.

Herbal plants are resources which are very valuable to humans. So, it is necessary to promote herbal plant conservation for sustainable use so that people have correct knowledge of herbal plants, have correct attitude, and give cooperation by implementing conservation and development. The researcher did this research in order to find guidelines for supporting herbal plant conservation and development by studying village health volunteers' behavior of implementing environmental education work for development of people's quality of life.

### **2.2.2 Objectives and principles of environmental education**

International operation meeting on environmental education at Belgrade, Ugoslavia (UNESCO, 1976:2-6) stipulated objectives and principles of environmental education as follows;

### **Objectives of environmental education**

Objectives of environmental education were determined for making people and the social group develops behaviors as follows;

1. Awareness which helps people and the social group be alert and sensitive to environments and various related problems
2. Knowledge which helps people and the social group have knowledge and understanding of basic environments and various related problems and understand humans' duties, responsibility, and roles in environments.
3. Attitude which helps people and the social group have values, concern, and commitment on environments and have inspiration to participate in continuously and seriously preventing and improving environmental quality.
4. Skill which helps people and the social group have knowledge and expertise in solving environmental problems
5. Evaluation ability which helps people and the social group able to evaluate environmental practice and environmental studying project by considering various components such as ecosystem, politics, economy, society, art, and education.
6. Participation which helps people and the social group be responsible for urgently solving environmental problems in order to bring about practice suitable for solving those problems.

**Principles of environmental education** were determined in Belgrade International Convention as follows;

1. Environmental education considers environments which naturally occur and are created by humans.
2. Environmental education should be continuous life process.
3. Environmental education should be interdisciplinary approach.
4. Environmental education should emphasize participation in solving environmental problems.
5. Environmental education should widely consider environments and think of differences of each region.

6. Environmental education should emphasize environmental situations in the present and future.

7. Environmental education should see whole development and think of environmental impacts.

8. Environmental education should promote realization of value and necessity in solving environmental problems occurring in the community, in the country, and in the world.

### **2.3 The Study of Basic Health Service**

Thailand participated in the international meeting on basic health service at Alma-Ata, Russia during September 6-12, 1978 under support of World Health Organization and the United Nations Children's Fund (UNICEF) according to the invitation of the Russian government. The important objective of this international meeting was to implement according to the resolution of the World Health Assembly which held the meeting in May 1976 to organize the mixing health service system which brought about good health to people throughout the world.

The international meeting on basic health service requested various countries and international organizations to urgently implement for development and implementation of basic health service throughout the world, especially developing countries. This meeting requested concerned people, governments of various countries, and related organizations to cooperate in initiating development and encouragement of basic health service (Office of Basic Health Service Committee, 2000:8-11).

#### **2.3.1 Definition and principles of basic health service**

Basic health service is health service which is necessary for humans' living by using methods and technologies according to scientific principles accepted by the society. This service must be equally provided to people, family, and the

community. The community and the government which are jointly responsible for this service must be able to continuously implement and encourage this service for future use. This service is the main duty of the government's health service system and is the main duty of the community social and economic development process in order to bring the whole system of the health service into people's houses and workplace as closely as possible, which is the beginning of the continuous process of creating people's healthiness (Office of Basic Health Service Committee, 2000:10).

### **Basic health service principles**

There are 4 main principles of basic health service as follows; (Office of Basic Health Service Committee, 2000:17-18)

1. People's participation (pp) means that people in that community will realize problems of their community and can solve problems. If the community cannot solve the problems, public authorities or people outside the community will solve those problems instead.
2. Use of appropriate technology (AT) means problems finding methods, problem solving process, and problems solving techniques by the community such as making the water supply system made from bamboo trunk, using herbs in the community, using the Thai massage system for relieving muscle pain.
3. Adjustment of the government's basic service system for basic health service (reoriented basic health service or health infrastructure) in order to bring about thorough service, distribution of resources to the mass and efficient organization of the referral system.
4. There is intersectoral collaboration (IC). Success of basic health service requires intersectoral collaboration between works of Ministry of Public Health and rural development works of Ministry of Agricultural- Co-operative, Ministry of Interior, Ministry of Education, and others.

### **2.3.2 Herbs and basic health service work**

Ministry of Public Health has a clear policy to promote and research or suitably and safely use traditional medicine and herbs. Therefore, use of herbal

medicine is a method which can provide cheap and safe medicine and respond to self reliance principles by mixing the suitable technology with basic health service methods. Therefore the project of basic health service making use of traditional medicinal herbs occurred with the following objectives (Mongkhon Wongkhanhin, 1989:7)

1. To collect, analyze, and classify data on used herbs.
2. To study and do a research on use and application of herbs and herbal plant varieties extending and planting techniques.
3. To promote use of herbs in the community, promote health, prevent and treating disease.
4. To disseminate and organize the training on use of safe, cheap, and quality herbs for treatment.
5. To establish or develop the herbal plant varieties distribution and planting centre.
6. To produce traditional medicine products for dissemination or selling with cheap price.

### **2.3.3 Thai traditional medicine in the present health service system**

“Thai traditional medicine” mentioned in this research report emphasizes “Thai applied traditional medicine” which can cover various works in the present health service system as follows; (Thai Traditional Medicine Committee, Soong-Nern Hospital, Nakhonratchasima province, 1991:5)

- **Treatment of patients** by using Thai traditional treatment methods: herbs steaming, herbal hot compressing, Thai massage.
- **Health promotion and disease prevention** on a base of holistic health.
- **Thai traditional pharmacy** means production of herbal medicine consisting of single dose such as turmeric, candelabra bush etc. and medicinal products such as herbal compress, muscle pain relieving medicine.
- **Basic health service** is revival and promotion of Thai traditional medicine (local medicine) in the community.

- **Coordination** is coordination with related agencies, natural network of groups or organizations involving Thai traditional medicine development.

- **Academic affairs** are development of knowledge on Thai traditional medicine.

Thai traditional medicine service in Soong-Nern district, Nakhonratchasima province is implemented in the Thai traditional Medicine Service Centre situated at Kud Jik Health Centre, Ma Klua Mai Health Centre, Hin Tang Health Centre, Soong-Nern district, Nakhonratchasima province. And the Thai traditional medicine service is provided in Soong-Nern Hospital, Soong-Nern district, Nakhonratchasima province by having activities covering various works as mentioned above, which promote use of herbal plants in the basic health service work. As health volunteers jointly implement the Thai Traditional Medicine Service Centre, they have important roles and involve use of herbal plants in the basic health service work. Use of herbal plants should be promoted and conserved for future use. And there should be study of data, finding implementation methods, and dissemination.

**2.3.4 2001-2010 basic health service implementation policy** is as follows;

**1. Basic health service policy**

1.1 Attach importance to the less fortunate and determine clear implementation models.

1.2 Adjust 14 basic health service components.

1.3 Attach importance to health culture in order to help make people healthy.

1.4 Attach importance to diversity and several dimensions.

1.5 Attach importance to integration on area, role, and participation of every sector.

1.6 Attach importance to promotion of the community organization, especially Thailand Health Volunteer Association and Network to be strong.

1.7 Attach importance to change in the village health volunteers' role from health service to social development in order to be consistent with the National Social and Economic Development Plans No. 8 – No. 9

1.8 Attach importance to protection of people's right according to the present constitution guidelines and protection of consumers in various aspects.

**2. Social movement:** In the future, there will be several models, several need dimensions, and several groups of social movement according to the Constitution of Kingdom of Thailand. Village health volunteers and Village Health Volunteers Association will be a part of social mechanism and can socially watch out and participate in leading movement.

**3. Good governance:** Transparent process is a part of bureaucracy reform. Every sector must be interested and comply with implementation. People will have more roles according to various mechanisms (from documents for the meeting of working group for making the basic health service development plan of the National Social and Economic Development Plan No. 9, dated September 1, 2000).

## 2.4 Village Health Volunteers

Village health volunteers are villagers who volunteer to help do the official jobs and help neighbors and relatives near their houses by coordinating with public authorities for the benefits of solving problems, preventing health problems, promoting and rehabilitating people's health. The public authorities support necessary equipment, advice academic principles and correct methods, and help provide the service over knowledge and ability of people and the community (Office of Basic Health Service Committee, 2000:34).

Development of health volunteers was seriously implemented in the National Social and Economic Development Plan No.4. Initially, Ministry of Public Health developed several types of health volunteers such as health reporter, village health volunteer, malaria volunteer. At present, Ministry of Public Health determines village health volunteers only in order to make these volunteers have an important role in being change agents on health behavior, communicating health information, disseminating health knowledge, planning and coordinating health development activities with sub-district health officers, and providing basic health service according to components of basic health service work.

#### **2.4.1 Duties of village health volunteers**

1. Communicate health information between health officers and people in the villages.
2. Give advice and knowledge and persuade neighbors to participate in developing health service work.
3. Provide health service to people.
4. Watch out and prevent health problems.
5. Rotate to work at the Community Basic Health Service Centre.
6. Be the leader in persuade neighbors to participate in the community's health service development activities and develop quality of life by using people's basic necessity process.
7. Protect health privilege of people in the village by being the leader in coordinating with the community leaders and sub-district administrative organization and stimulating planning and implementation for development of the village's health service.

#### **2.4.2 Qualifications of people who are village health volunteers**

Ministry of Public Health widely determines criteria of selecting people who will be village health volunteers as follows; Those people must be literate, are 15-60 years old, and really have domicile in that community.

### **2.4.3 Village health volunteer selection methods**

Village health volunteers may be selected by dimensional social methods by making the village map and asking villagers in order to find people who naturally help and take care of villagers. Village health volunteers may be selected by village committee. Volunteers jointly consider the suitable people in each community. And there are other selection methods. The obtained selection stems from willingness of village health volunteers (Wanjai Khaopattananawan, 2000:14-16).

### **2.4.4 Activities of village health volunteers working in the Community Basic Health Service Centre (Office of Basic Health Service Committee, 1992:3-5)**

Activities which should be done by village health volunteers are as follows;

1. Establish the village's information centre. Village health volunteers should have the following roles;

1.1 Survey necessary health information such as pregnant women, child, elder, the disabled, risk group, diseases spread sources.

1.2 Meet and present health information and jointly plan with the community and village committee.

1.3 Organize the disaster and accident information sending system in the village. The information necessary for the village is as follows;

a. Village map showing important places such as number of households, temples, schools, health centers, fund, houses of village health volunteers, and households which fail to pass the criteria of people's basic necessity.

b. Total number of populations classified by male, female, and age

c. Overview of the villages which pass and fail to pass the criteria of people's basic necessity according to health indicators. For the articles which fail to pass the criteria, the importance of problems and problem solving guidelines must also be sequenced.

d. Access to the health service by showing number of children aged 0-1 receiving vaccine, number of children aged below 0-1 receiving vaccine and receiving treatment service, and total number of populations in the village having the treatment welfare card for low-income people, health card, social security card, and other privileges.

e. Number of people who are ill/ die of important diseases in the villages

f. People's participation such as number of people being members of the fund and various funds in the village such as medicine fund, multipurpose fund, saving fund.

2. Disseminate knowledge according to service activities and problems of the community. Village health volunteers should have the following roles;

2.1 Disseminate knowledge to people and various groups such as pregnant women, mother with a baby, disease risk group, disabled relatives, elders.

2.2 Disseminate knowledge by holding the exhibition or demonstration.

2.3 Disseminate knowledge through various media, information distribution center etc.

3. Provide necessary services. Village health volunteers should have roles in the following issues;

3.1 Nutrition

3.1.1 Weigh children.

3.1.2 Jointly solve problems of children lacking nutrients and iodine.

3.2 Maternal and child health and family planning

3.2.1 Tell pregnant women to receive pregnancy care and examine abdomen according to the specified time and provide the service of weighing pregnant women every month.

3.2.2 Tell children below 5 years old to check health according to the specified time.

3.2.3 Give oral contraceptives and condom.

### 3.3 Vaccination

3.3.1 Tell mother to take her child to receive vaccine according to the specified time.

### 3.4 Control local diseases.

3.4.1 Eliminate mosquito breeding sources.

3.4.2 Survey dogs and help health officers vaccinate and eliminate stray dogs.

3.4.3 Collect and send feces for examining ascaris lumbricoides egg.

3.4.4 Collect and send blood sample for examining malaria infection.

3.4.5 Collect and send phlegm for examining tuberculosis infection.

### 3.5 Provide clean water and eliminate dirt source.

3.5.1 Eliminate carrier breeding source (insect and rat).

### 3.6 Perform initial treatment.

3.6.1 Perform initial treatment according to symptom.

3.6.2 Perform first aid before referral.

### 3.7 Provide necessary medicine.

3.7.1 Provide and sell ordinary household medicine.

3.7.2 Establish the herb using development and revival group in the locality.

### 3.8 Dentistry

3.8.1 Hold the brushing demonstration exhibition.

3.8.2 Provide and sell toothbrush and toothpaste.

### 3.9 Community mental health work

3.9.1 Establish the Elder Association.

3.9.2 Organize the exercise activity.

### 3.10 Prevent accident, disaster, and incommunicable diseases.

3.10.1 Measure blood pressure.

3.10.2 Examine urinal sugar.

3.10.3 Establish the community disaster/accident prevention group.

3.10.4 Establish the Disabled's Ability Rehabilitation and Therapy Community Centre.

### 3.11 Protect consumers.

3.11.1 Establish the consumer protection group for watching illegal doing such as color blending food, set medicine etc.

### 3.12 Prevent AIDS.

3.12.1 Establish the disease spread source prevention group in the community for preventing people from infecting AIDS.

### 3.13 Control and prevent environments.

3.13.1 Examine the quality of the community's consumption water source.

For the basic health service work in the community, village health volunteers rotate to work in the community basic health service center by providing health service according to the group's agreement, being the centre of knowledge, information, and resources, being the centre of working together among concerned people in the community in order to enable people to take care of themselves. Village health volunteers should also establish the herbal plant revival and development group. The researcher studied participation on herbal plant conservation and development for village health volunteers for being the guidelines of developing herbal plant activities according to village health volunteers' roles.

## 2.5 The Study of Herbal Plants

### 2.5.1 General knowledge of herbs

Medicinal plant or herb naturally occurs and is very important to humans' lives, especially in health dimension which means health promotion and treatment. According to the 1967 Medicine Act, herbal medicine means medicine deriving from plants, animals, or minerals without mixing or transformation.

Most herbs for the basic health service works are herbal plants. Plants or trees have 5 important components: root, stem, leaf, flower, and fruit. These parts have different shapes, structural features, and roles.

Use of herbs as medicine must think of nature of each kind of herbs, herbal varieties, planting environment, season, and herb picking duration, which are the important factors which determine herbal quality.

#### Methods of picking herbs used as medicine

General principles of picking parts used as herbal medicine are divided by parts used as medicine as follows;

1. **Rhizome:** Rhizome is picked while plants stop growing and leaf and flower completely fall. Or rhizome is picked during the beginning of winter to the end of summer because rhizome considerably accumulates medicinal substances during this period. Rhizome is picked by carefully digging such as boesenbergia, tiger herbal, galanga.

2. **Leaf or all parts of plants:** Leaf or all parts of plants should be picked while plants most grow. Duration of picking some plants may be clearly determined such as picking leaf which is not too young or too old, picking the close flower, picking the blooming flower. Leaf picking duration is determined because at

that time the leaf most has medicinal substances. Plants picked by plucking are holy basil, Indian marsh fleabane, guava, and kariyat.

**3. Stem bark and root bark:** Stem bark is mostly picked during the end of summer to the beginning of the rainy season because medicinal substances in the plants are high and the stem bark is easily peeled. Bark should not be peeled around the stem because it may destroy food transportation of the plants and make the plants die. Bark should be peeled from branches instead. The bark should not be peeled from the big stem of plants but should be peeled in the half circle. While the root bark should be picked at the beginning of the rainy season. As peeling of the stem bark or root bark damages the growing of plants, people should be interested in the suitable picking methods.

**4. Flower:** Generally, flower should be picked while it begins blooming. But some plants are picked during the close flower. For example, clove is picked while it changes from green to red.

**5. Fruit and seed:** Some herbal plants are picked when the fruit is not ripe. For example, young fruit of guava is picked and used for treating diarrhea. But, generally, herbal plants which are picked when the fruit is fully ripe are *Solanum indicum* Linn., *Solanum trilobatum* Linn., long pepper, pumpkin seed, seed of foetid cassia., seed of *Combretum quadrangulare* Kurz.

The quality of herbal medicine also depends on the planting area. For example, thorn apple should be planted in alkaline soil for considerable medicinal substances. If custard apple is planted in the sandy soil, there will be considerable quantity of essential oil and there will be the environmental problems for the growth. Alkali also affects herbal quality.

### **Herbal plant keeping and transformation**

Herbal medicine transformation methods depend on kinds of herbal parts used as medicine, familiarity of each area, frequently used methods. Herbal parts used as medicine are as follows;

**1. Rhizome:** Select the same size of rhizome and thoroughly clean the rhizome. Remove fibrous root. For the plants with solid flesh which are difficult to be dry, slice into suitable pieces. The plants which are not solid must be heated. Rhizomatous plants mostly consist of protein, flour, and enzyme. If these plants are steamed, it will be easily dried. After that, these plants will be sliced and dried in the suitable temperature.

**2. Bark:** Slice bark into the suitable size and dry.

**3. Leaf and all parts of the plant:** Some plant leaf having essential oil should be dried indoors. Before the medicinal substance is completely dry, it should be tied in a bundle to prevent easy falling. For example, leaf or stem of ocimum sanctum and custard apple should be thoroughly cleaned, dried in the sunlight, and stored in a close container without causing fungus.

**4. Flower:** After flowers are picked, they must be dried or steamed. But the flower shape should be maintained to prevent loss of medicinal substance such as clove flower.

**5. Fruit:** Generally, after the fruit is picked, it can be dried in the sunlight. Some fruit must be sliced before drying or steaming.

**6. Seed:** The fruit must be picked and dried. Then the peel and seed must be removed from the fruit such as foetid cassia. Some plant is picked while its fruit is dry.

General drying temperature is 50-60 degree celsius which can stop roles of enzyme existing in the plants and prevent important substance in the plants such as glycoside and alkaloid in the plants from disappearance.

### **Herbal keeping**

For guarantee of the herbal medicine quality and treatment effectiveness, herbal medicine should be kept as follows;

1. Medicine which will be kept must be dried to prevent fungus and oxidization. Medicine having fungus must always be dried in the sunlight.
2. Keeping place must be dry, cold, and easily ventilated.
3. Herbal medicine should be suitably kept and classified. For example, poisonous medicine should be suitably separated from fragrant medicine to prevent confusion.
4. People should prevent fire, worm, rat, and various insects.

### **Recommendations for using herbs**

Correct use of herbs is as follows;

1. **Use the suitable herbs:** A lot of herbs have similar names. Some area differently calls the herbs. Therefore, people must know and use the suitable herbs.
2. **Use the suitable parts:** As root, leaf, flower, bark, fruit, seed of herbs have different effectiveness, people must know that which parts can be used as medicine.
3. **Use the suitable quantity:** If the herbs are used too slightly, the treatment is not effective. If the herbs are used too much, it may be dangerous or poisonous to the body.

**4. Use the correct method:** For some herbs, people must use fresh herbs. For some herbs, people must boil the herbs. Therefore, people must use the correct method.

**5. Correctly use to prevent illness:** Laxative is used for treating constipation. If astringent medicine is used, people will have more constipation. (Office of Basic Health Service Committee, 1997:2-13).

### 2.5.2 Herbal items for the basic health service works

According to the seminar of academicians, herbal experts, and related organizations, there was consideration of selection of diseases/ illness and herbal items for the basic health service works by having the following details;(Office of Basic Health Service Committee, 1997:17-18)

#### 1. Herbs for treating diseases/illness of digestive system

- (1) Peptic Ulcer: Turmeric, banana
- (2) Bloat: Turmeric, ginger, clove, garlic, holy basil, lemongrass, pepper, long pepper, galanga, boesenbergia, nutgrass, camphor seed, bustard cardamom, lime, tiger herbal
- (3) Constipation: Candelabra bush, tamarind, senna, hoary basil, cassod tree, golden shower
- (4) Diarrhea: guava, kariyat, banana, pomegranate, mangosteen, catechu tree
- (5) Nausea, vomit: ginger, Indian mulberry
- (6) Parasitic Infestation: ebony tree, Rangoon creeper, monkey jack, pumpkin
- (7) Toothache: Orange jessamine, Siamese rough bush, para cress
- (8) Food aversion: Heart-leaved moonseed, cassod tree, bitter cucumber, neem

2. Herbs for treating diseases/illness of the respiratory system

(1) Cough and irritated neck caused by phlegm: ginger, long pepper, midnight horror, emblic myrabolan, tamarind, lime, *Solanum trilobatum* Linn, *Solanum indicum* Linn.

3. Herbs for treating diseases/ illness of the urinary system

(1) Strangury: Jamaica sorrel, Indian marsh fleabane, lemongrass, pineapple, lalang, black sugar cane

4. Herbs for treating skin diseases

(1) Black dot ringworm: Garlic, galanga, candelabra bush, Thong Phan Chang, betel vine

(2) Pruritic head: Soap erry

(3) Burn wound: Asiatic pennywort, coconut oil, aloe, ice

(4) Pock, impetigo: Turmeric, candelabra bush, garden balsom, aloe, *gynura procumbens*, kariyat

(5) Allergy, inflammation from bite of insects: Turmeric, ivy gourd, goat's foot creeper, *clinacanthus nutans* (Burm.f.) Lindau, *Barleria lupurina* Lindl.

(6) Urticaria: Betel vine

(7) Herpes Zoster, Herpes Simplex: *Clinacanthus nutans* (Burm.f.) Lindau

5. Herbs for treating other diseases/ illness

(1) Muscle pain: Cassumunar

(2) Insomnia: Cassod tree

(3) Fever: Kariyat, heart-leaved moonseed

(4) Lice: Sugar apple

### 2.5.3 Other values and uses of herbal plants

#### 1. Herbal plants which are food, herbs, and decoration comprise

- Flowers of plants which are food
- Vegetables
- Trees

#### 2. Herbal food which increases immunity of the body is as follows;

Asiatic pennywort

- Help reduce inflammation.
- Quickly cure wound.

Guava

- Fruit considerably having Vitamin C

Lemongrass

- Help reduce bloat.

#### 3. Use of herbal plants to prevent and eliminate pests

Herbal plants which can prevent and eliminate insects or worms are papaya, citronella grass.

#### 4. Herbal products for health and cosmetics

For herbal shampoo and herbal liquid soap etc., herbs will be transformed and mixed with chemical components in that product (Faculty of Pharmaceutical Science, Mahidol University, 1993:301).

Apart from preventing and caring physical and mental health, herbs can reduce and prevent environmental problems caused by use of chemicals to eliminate pests, which will impact on humans and environments.

## 2.6 Concepts of Herbal Plant Conservation and Development

There was explanation of the concepts and theories of herbal plant conservation and development as follows;

### 2.6.1 Herbal plant varieties conservation and collection

There are two methods of herbal plant varieties conservation and collection as follows; (Plant Genotype Resource Conservation Development and Research Coordination Sub-Committee, 1996:31-33).

1. Building herbal gardens
2. Building herbal museums

#### Building herbal gardens

At present, there are 3 groups of herbal gardens as follows;

1. Big-size herbal gardens are as follows;

Sireerukkhachart Herbal Garden of Mahidol University, Salaya, Nakhon Pathom Province

Her Royal Highness Princess Maha Chakri Sirinthorn Herbal Garden of Petroleum Authority of Thailand, Mabtaphud, Rayong Province

Herbal Garden of Department of Medical Science, Chanthaburi Province

2. Medium-size herbal gardens: It is necessary for the Faculty of Pharmaceutical Science of various universities to have these herbal gardens for teaching about herbs. Size of herbal gardens depends on area of the universities. For example, as Chulalongkorn University does not have considerable areas, it plants 300 kinds of shrubs and 200 kinds of herbs in the bin.

Moreover, Department of Forestry has built several herbal gardens such as Phu-Khae Botanical Garden.

The Traditional Medicine Association has a herbal garden at Wat Sam Phra Ya. Due to few areas, perennial plants cannot be planted.

3. Small-size herbal gardens: There are small-size herbal gardens in hospitals and health centers. During the past 5-6 years, there was campaign for use of herbal gardens for the basic health service; therefore, herbs were planted in the provincial hospitals and health centers throughout the country.

Moreover, there are herbal gardens in temples and communities realizing the importance of herbs.

#### **Benefits of herbal gardens**

1. Keep nature and environments.
2. Be a herbal knowledge source for pupils, students, researchers, and general people.
3. Be used as medicine in the basic health service.
4. Be the relaxation place.

Moreover, there should be campaign for building more herbal gardens in the houses, local community, industrial factory, forest park, park.

#### **Building herbal museums**

Building herbal museums is herbal conservation. At present, there is shortage of some kinds of herbs so people sell other kinds of herbs having similar characteristics instead. This makes herbal users unable to receive treatment benefits and destroys herbal occupation.

Therefore, building herbal museums enables users to compare that whether the obtained herbs and the herbs planted in the museum are the same kind. This will help solve the problem of using other kinds of herbs having similar characteristics instead.

### **2.6.2 Giving the meaning and attaching value to herbs and biological diversity in the locality**

Yos Santasombat (1999:239) said that humans give the meaning and attach value to herbal plants as follows;

- Forest is a source of collecting biological diversity, especially herbal plants and food which are valuable to humans.
- Attaching values to herbal plants harvested with natural resource conservation principles. For the highest effectiveness of the medicinal benefits, herbs should be harvested in the suitable days, directions, and seasons.
- Harvesting method must think of use with the highest benefits such as selecting herbs which are completely grown and have high medicinal value.
- Perennial bark is picked by cutting some parts of bark to prevent the plants from dying.
- Quantity of using each time must think of sufficient use without excessive picking.
- Attaching value to herbal plants and habitat of herbal plants through belief that herbal plants are alive, have spirit, and have owners. People ask permission from herbal plants to pick the plants by using flower, joss stick, candle, and, incantation to pay respect to the plants.

### **2.6.3 Local wisdom and herbal plant conservation**

There was collection of concepts and activities of herbal plant conservation as follows; (Thai Traditional Medicine Institute, Ministry of Public Health, 1997:33-37)

1. Herbal plants naturally occur and are planted in the house area.
2. Acquisition of plant varieties stems from keeping the plant varieties seeds for a long time.
3. Plant varieties are mostly picked when the fruits are very ripe (December to January).

4. Conservation activities have been done from the past to the present time.

4.1 Social movement for sustainability of plants, vegetables, herbs

- Agencies or people group who are interested
- Government sector and private sector
- Several educational institutes jointly doing a research

4.2 Activities done from the past to the present are as follows;

4.2.1 Collect information by

Botany and Weed Science Division, Department of Agriculture, Ministry of Agriculture and Co-operatives

- Local plant studying project
- Thailand Vegetable and Plant Genotype

Conservation and Collection

food and medicine

- Collect local vegetables and plants used as
- Knowledge dissemination project, herbal teacher

4.2.2 Do a research on local vegetables and plants in different perspectives.

4.2.3 Promote conservation of local plants, vegetables, and herbs

Association

- Local Plants, Vegetables, Herbs Conservation
- Private development organization group
- Survey local herb, vegetable, and plant varieties
- Establish the plant collection center and

extend plant varieties for general people.

conservation and use

- Plant the plants in the community for
- Encourage people to plant for consumption

and selling

- Establish the community organization network.
- Organize activities.

4.2.4 Organize a stage for exchanging concepts and experiences and making public relations by increasing the issue of local herbal plants, vegetables.

- The meeting on research guidelines

#### **2.6.4 Proposal for herbal development**

The National Research Council Committee, Pharmaceutical and Chemical Science, Khon Kaen University and Thailand Herb Association (1997:170-174) gave the proposal for herbal development as follows;

##### **1. Information**

The information should emphasize cooperation and coordination in collecting new and old knowledge for the mixing of Thai pharmacy and medicine and the modern medicine.

##### **2. Botany and agriculture**

There should be more promotion and development of botanical and agricultural knowledge. There should be development of herbal plant varieties by planting herbal plant varieties which may be brought from the forest or abroad.

##### **3. Quality control**

Quality control consists of the following steps;

###### **3.1 Harvest**

There should be correct harvest. And there should be study and development of harvest knowledge.

### 3.2 Process after harvest

For any important herbs, this step should be researched by studying preparation of raw material in order to obtain the herbal raw materials which have good quality and safety for development as the medicine.

### 3.3 Keeping

Keeping should think of use of containers, storing place, and constancy of herbs.

### 3.4 Examining and analyzing quality

Examining and analyzing quality for use as the principles of controlling quality of raw material and products which are very important.

## 4. Health service

Initially, the government must try to promote sufficient production of herbal medicine. After that, the government should determine the measure of using medicine produced from domestic herbs instead of the same medicine from abroad for self-reliance in the future.

## 5. Marketing

5.1 Increase the efficiency of producing herbal raw materials, select plant varieties, and nourish plant varieties.

5.2 Use marketing promotion technology, make public relations.

5.3 Use technology to increase product value such as selling transformed products.

5.4 Develop product quality, packaging, and control herbal product quality.

## 6. Law

Amend law to reduce obstacles of developing herbal medicine.

As for giving proposal for herbal plant development, attaching value, giving the meaning, and organizing activities of herbal plant conservation and

development as mentioned above, village health volunteers who are representatives of people are important people of the area to conserve and develop herbal plants for people in the next generation to use.

## 2.7 Related Researches and Documents

Wilaiporn Somboonchai (1991, 110-120) did a research on participation of community development volunteer leaders in conservation of natural resources in Lampang province. The research results were as follows;

1. Participation of community development volunteer leaders in conservation of natural resources was in the moderate level.
2. Factors correlating with participation were sex, duration living in the locality, social position, and receipt of information.
3. Factors which did not correlate with participation were age, educational level, occupation, income, and occupied area.

Somjai Khemjaroen (1991:84) did a research on participation of people in forest conservation: Case study of Sa-Iab Sub-district, Song District, Phrae Province. The research results found that factors which correlated with participation of people in forest conservation were age, educational level, occupation, and income, number of the used land, knowledge, opinion, people's receipt of information on forest conservation, and neighbors' agreement in forest conservation.

Chairote Thanasanti (1992:122-128) did a research on participation of sub-district council committee in natural resource conservation: Case study of Ubonratchathani Province. The research results found that if duration living in the locality, annual income, number of occupied area, use of natural resource, status in the sub-district council, receipt of information, receipt of the training were different, participation in natural resource conservation was also different at the significant level.

Adul Wutthijureephan (2001:155-162) did a research on correlation of herbal doctors and biological diversity on herbal plants in Kanchanaburi Province. Research recommendations were as follows; For planning about natural resource management, concerned people such as public authorities, local community representatives living in the conservation forest area, and local herbal doctors should participate in planning in order to enable these people to exchange knowledge and experience, perceive the problems and natural resources management methods in order to bring about sustainable conservation of biological resources according to conservation principles.

Phattharaphorn Tangsukruthai (1999:Abstract) did a research on people's health behavior on use of herbs in the basic health service, Nonthaburi Province. The research results found that people's knowledge was in the moderate level. People's attitude was in the high level. People's practice was in the moderate level. If these people's sex, age, marital status, and occupations were different, their health behavior on attitude was not different. But, their health behavior on knowledge and practice of use of herbs in the basic health service works were different. If these people's educational level and dwelling area were different, their health behavior on practice was not different. But their health behavior on knowledge and attitude toward use of herbs in the basic health service works were different. If these people's receipt of herbal information was different, their health behavior on knowledge, attitude, and practice of use of herbs in the basic health service works were not different. If these people's average income, receipt of information, and experiences of using herbs were different, their health behavior on knowledge, attitude, and practice of use of herbs in the basic health service works were different. There was positive correlation between knowledge and attitude, knowledge and practice, and attitude and practice of use of herbs in the basic health service works.

Udom Umphornphan (1996:91) did a research on creation and measurement of achievement of the environmental education curriculum on conservation of natural resources and environments by using self- textbook : Case

study of health volunteers, Phatthalung Province. The research results found that village health volunteers had more knowledge of environmental education after studying the environmental education curriculum. Factors which influenced village health volunteers' attitude toward conservation of natural resources and environments were receipt of environmental information, education, experiences of environmental problems, and land use, respectively. Factors which influenced behavior were receipt of environmental information, experiences of environmental problems, land use, and education, respectively.

After studying related researches and documents, the researcher found that village health volunteers were important people to promote use and conservation and development of herbal plants. Factors which affected dissemination of herbal plants were knowledge of using herbs, herbal promotion of various agencies, receipt of information. Various related data would be studied by the researcher.

## **2.8 Research Variables**

According to the study of various documents, the research variables which correlated with people's participation were as follows;

**2.8.1 Sex:** Men and women have different opportunities in participating in social activities. In the Thai society, men mostly lead the public activities. Therefore, sex correlates with participation on herbal plant conservation and development for village health volunteers.

Wilaiphorn Somboonchai (1991:78) did a research on participation of community development volunteer leaders in conservation of natural resources in Lampang Province. The research results found that men had more participation in natural resource conservation than women. According to the statistic test, if the sex

was different, participation in natural resource conservation was also different at the significant level of 0.001.

Suwannee Khongthong (1993:110) did a research on participation of people in conservation of mangrove forest in Sikao District, Trang Province. The research results found that sex correlated with participation in conservation of mangrove forest.

According to the study of related documents, men and women had different nature, culture, and social roles. Therefore, populations with different sexes correlated with different participation.

**2.8.2 Age:** If people's age is different, their experiences and ability are also different. The Thai society believes that older people have more experiences and knowledge and are obeyed by younger people. So, older people's roles are accepted. And they have more opportunities in participating in the social activities as shown in the following researches;

Sansana Tantichart (1988:48) did a research on participation of the sub-district council committee in the water source development project, Kalasin Province. The research results found that the sub-district council committee aged over 50, aged 40-49, aged 48, and aged below 48 participated in development of the small-size water source, respectively.

Somjai Khemjaroen (1988:214) did a research on participation of people in forest conservation: Case study of Sa-Iab Sub-district, Song District, Phrae Province. The research results found that age was a factor which correlated with participation of people in forest conservation.

According to the study of related documents, age affected people's experiences. In the Thai society, older people's roles were different from younger

people's roles. Therefore, age was a factor which correlated with participation in herbal plant conservation and development.

**2.8.3 Educational level:** Education makes people have knowledge, thought, and understanding of life, society, and environment and able to well participate as shown in the following researches;

Cha-An Wutthikamraksa (1983:114-115) did a research on economic and social factors which affected participation of people in the rural employment project : Case study of the outstanding project of Khung Phayom Sub-district, Ban Pong District, Ratchaburi Province. The research results found that high educated people had more participation in the project than low educated people.

As education makes humans have thought and good behavior and able to solve various problems, therefore, education is factor which correlates with herbal plant conservation and development.

**2.8.4 Occupation:** People whose occupation involves plants such as agriculture may participate in herbal plant conservation and development. This is different from other occupations.

Suwannee Khongthong (1993:112) did a research on participation of people in conservation of mangrove forest in Si Kao District, Trang Province. The research results found that occupation correlated with participation in conservation of mangrove forest.

Sanchai Sootiphanwiharn (1996:96) did a research on participation of people in the water pollution problems : Case study of Muang Phuket Municipality. The research results found that occupation correlated with people's participation in doing activities. Different occupations affected different participation in doing activities.

According to related researches, people whose occupations have to directly and indirectly rely on resources can understand importance and necessity to take care of natural resources. . Therefore, occupation is a factor which affects participation on herbal plant conservation and development.

**2.8.5 Duration living in the community:** People living in the locality for a long time understand social condition and environments in the community and love the community where they live, therefore, they have more opportunities in participating social activities as shown in the following researches;

Chairote Thanasanti (1992:122) did a research on participation of the sub-district council committee in natural resource conservation: Case study of Ubonratchathani Province. The research results found that duration living in the community affected participation in natural resource conservation.

Wimonrat Srising (1995:298) did a research on participation of Kanchanaburi Women Group in natural resource conservation. The research results found that duration living in the community correlated with participation of Kanchanaburi Women Group in natural resource conservation. The sample group living in the village for a longer period had more participation in natural resource conservation than the sample group living in the village for a shorter period.

According to the study of related documents, people living in the community for a longer period have more participation in natural resource conservation. Therefore, duration living in the community correlated with herbal plant conservation and development.

**2.8.6 Working duration of village health volunteers:** Working brings about knowledge, understanding, and experience. Working for a long period brings about more participation in activities as shown in the following researches;

Wilaiporn Somboonchai (1991:78) did a research on participation of community development volunteer leaders in natural resource conservation in Lampang Province. The research results found that community development volunteer leaders with working experiences over 2 years had more participation in natural resource conservation than community development volunteer leaders with working experiences only 1 year.

Sarawanee Weenakhub (1990:81) did a research on border patrol police's roles in forest conservation. The research result found that if border patrol police's working duration was different, their roles in forest conservation was different.

According to the study of various documents, if working duration is different, participation is also different. Therefore, working duration of village health volunteers affects participation on herbal plant conservation and development.

**2.8.7 Attitude:** Attitude means each person's mental condition which stems from experience or learning which influences opinion and behavior of that person (Sucha-Surang Jan-Em, 1990:104). Attitude makes people evaluate and select anything and determines direction of real behavior.

Thianchai Buraphachanok (1995:114-115) did a research on participation of community in health activity of basic health service self reliance village, Rayong Province. The research results found that attitude correlated with participation of community.

Suphot Phetchkanphum (1989:107) did a research on assistant district officers' knowledge and attitude toward environmental problems in the countryside. The research results found that knowledge of environmental problems in the countryside positively correlated with attitude which encouraged solution to the forest, soil, and water problems in the countryside.

According to the study of related documents, attitude correlates with participation in activities. Therefore, attitude toward herbal plant conservation and development correlates with participation on herbal plant conservation and development.

**2.8.8 Knowledge** Knowledge means fact, truth, and information which humans collect from various experiences(Good,1973:325). Therefore, knowledge is an important factor which brings about understanding and practice ability. If people have knowledge in any issue, they can practice in that issue.

Sathaporn Itthiphong (1993:163) did a research on participation of sub-district council committee in mangrove forest conservation : Case study of Tha Mai District, Nai Arm Minor District, Chanthaburi Province. The research results found that knowledge of mangrove forest conservation was a factor which caused difference in participation level.

Phornthip Angundee (1996:69) did a research on participation of women leading promotion and preservation of environmental quality in Ratchaburi Province. The research results found that knowledge was a factor which affected promotion and preservation of environmental quality.

According to the study of related documents, knowledge is an important factor of determining practice behavior. Therefore, knowledge of herbal plant conservation and development affects participation on herbal plant conservation and development.

**2.8.9 Receipt of information:** Communication to receive information is very necessary for humans as information is an important factor used by humans to make decision. Humans need information in order to know events, want correct practice advice, and create self confidence for use in talking with other people as shown in the following researches.

Chattraphorn Wiwatthanawanich (1994:101) did a research on factors which correlated with participation in environmental and natural resource conservation for people in Phla Village and Phayoon Village, Ban Chang District, Rayong Province. The research results found that receipt of conservation information correlated with participation in environmental and natural resource conservation.

Walaiphorn Daosuwan (1993:95) did a research on participation of local people in conservation of Bung Khun Tha Le. The research results found that receipt of information caused difference of participation in conservation of Bung Khun Tha Le.

According to the study of related documents, receipt of conservation information correlates with participation in environmental and natural resource conservation. Therefore, receipt of information on herbal plant conservation and development is a factor which affects participation on herbal plant conservation and development.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

This research was a survey research consisting of quantitative research and quality research with the objective to study participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province.

The quantitative research was used to evaluate participation of village health volunteers in herbal plant conservation and development and study factors which influenced participation of village health volunteers in herbal plant conservation and development by using the interview.

The quality research was used to study herbal plant conservation and development roles of village health volunteers in the Thai traditional medicine center and study problems, obstacles, and recommendations through data of the Thai traditional medicine center, interviewing village health volunteers, observation, and related documents.

Researching details were as follows;

- 3.1 Researched target areas
- 3.2 Researched populations and sample group
- 3.3 Tool and tool design
- 3.4 Tool quality examination methods
- 3.5 Data collection
- 3.6 Data analysis and statistics used in the research

### **3.1 Researched Target Areas**

The researcher selected the studied areas in Soong-Nern district, Nakhonratchasima province by purposive sampling. The researcher studied in the areas of Kud Jik sub-district, Ma Kluea Mai sub-district, and Sema sub-district because these sub-districts used to be the target areas of the Public Health Ministry's project of basic health service making use of traditional medicinal herbs. In these three sub-districts, there is treatment by Thai traditional medicine by using herbal plants and distribution of herbal products. Villagers and village health volunteers produce herbal medicine and herbal cosmetics for distribution in the Thai traditional medicine center for use in treating and taking care of people's health.

### **3.2 Researched Populations and Sample Group**

#### **1. Populations**

Researched populations were village health volunteers working in the community basic health center in the studied area which was Soong-Nern district, Nakhonratchasima province. These populations were selected from total number of village health volunteers living in the responsible areas of Kud Jik Health Center, Kud Jik sub-district, Ma Kluea Mai Health Center, Ma Kluea Mai sub-district, and Hin Tang Health Center, Sema sub-district because these health centers have Thai traditional medicine centers. Details were shown in the table 3-1.

**Table 3-1 :** Number of village health volunteers in Soong-Nern district, Nakhonratchasima province, classified by responsibility areas of health centers where there are Thai traditional medicine centers

District	Sub-district	Names of health centers	Village number	Number of village health volunteers
Soong-Nern	Kud Jik	Kud Jik Health Center	1	23
			2	17
			3	15
			4	9
			5	11
			6	8
	Ma Kluea Mai	Ma Kluea Mai Health Center	1	45
			2	25
			3	14
Soong-Nern	Ma Kluea Mai	Ma Kluea Mai Health Center	5	13
			9	8
			10	12
			11	13
	Sema	Hin Tang Health Center	3	13
			4	30
			5	15
			6	17
			7	11
			9	17
			12	11
<b>Total</b>	<b>3</b>	<b>3</b>	<b>20</b>	<b>327</b>

## 2. Size and random sampling

2.1 The researcher found the sample group size of total populations by using Yamane's formula (Buntham Kijpreedaborisut, 1988:25)

$$n = \frac{N}{1 + Ne^2}$$

When

n	=	Sample group size
N	=	Population group size
e	=	Error of random sampling (0.05)

Substitute value

$$n = \frac{327}{1 + 327(0.05)^2}$$

$$= 179.91$$

$$= 180$$

So the sample group deriving from calculation was 180 people.

### 2.2 Sample size classified by sub-district

As for this research, the researcher studied three sub-districts as shown in the table 1 in order to distribute the sample group in every sub-district by using proportion according to number of village health volunteers living in the responsible areas of 3 health centers which are situated in each sub-district as follows;

Formula

$$n_p = N_p \times \frac{n_o}{N}$$

When  $n_p$  = Sample size in each sub-district  
 $N_p$  = Number of village health volunteers in each sub-district  
 $N$  = Total number of village health volunteers  
 $n_o$  = Size of total sample group

The obtained sample size was classified by sub-district as shown in the table 3-2.

**Table 3-2 :** Number of village health volunteers and sample size classified by sub-district

District	Sub-district	Number of village health volunteers	Sample size
Soong-Nern	Kud Jik	83	46
	Ma Kluea Mai	130	71
	Sema	114	63
<b>Total</b>	<b>3</b>	<b>327</b>	<b>180</b>

### 2.3 Sample size classified by village

The table 3-1 showed that Soong-Nern district consists of 20 villages situated in the responsible areas of health centers where there are Thai traditional medicine centers. As for this research, the researcher studied 20 villages in order to distribute the sample group in every village by using proportion according to number of village health volunteers in each village. The obtained sample size was classified by village as shown in the table 3-3.

**Table 3-3 :** Number of village health volunteers and sample size classified by village

Sub-district	Names of health centers	Village number	Number of village health volunteers	Number of sample group
Kud Jid	Kud Jik Health Center	1	23	13
		2	17	9
		3	15	8
		4	9	5
		5	11	6
		6	8	5
<b>Total</b>		<b>6</b>	<b>83</b>	<b>46</b>
Ma Kluea Mai	Ma Kluea Mai Health Center	1	45	25
		2	25	14
		3	14	8
		5	13	7
		9	8	4
		10	12	6
		11	13	7
<b>Total</b>		<b>7</b>	<b>130</b>	<b>71</b>
Sema	Hin Tang Health Center	3	13	7
		4	30	17
		5	15	9
		6	17	9
		7	11	6
		9	17	9
		12	11	6
<b>Total</b>		<b>7</b>	<b>114</b>	<b>63</b>

2.4 For quality data collection, the sample group consisting of 12 people was village health volunteers who are the committee of the Thai traditional medicine center of the studied sub-district, village health volunteers in the studied areas, and health officers of the health centers. The researcher selected the sample group from people who used to work in such position for over 5 years and from people who had the information on implementation of herbal plants and history of the Thai traditional medicine center in the studied health center.

### **3.3 Tool and Tool Design**

#### **3.3.1 Quantitative research tool**

For quantitative research, the researcher collected data by using the interview. The interview consisted of the following components;

**Section 1 The interview on general information divided into two parts as follows;**

**Part 1** The interview on personal factors consisting of sex, age, educational level, working duration, duration living in the community, occupation. Questions were in the form of multiple choices and filling in the blanks.

**Part 2** The interview on village health volunteers' social and economic factors consisting of land occupation ownership, receipt of information on herbal plant conservation and development, being members of the herbal plant development and conservation group. Questions were in the form of multiple choices and filling in the blanks.

**Section 2** The interview on knowledge of herbal plant conservation and development. There were 20 close-ended questions with 4 choices. Creation of the interview on knowledge covered the following contents;

1. Importance and benefits of herbal plants
2. Herbal plants and sustainable use
3. Herbal plant shortage causes and the present herbal plant situation
4. Herbal plant conservation guidelines

Score criteria	Right answer	1 score
	Wrong answer	0 score

Score classifying criteria for the interview on knowledge of herbal plant conservation were divided into 3 levels as follows;

Knowledge level	Scores
Low	0-6
Moderate	7-13
High	14-20

**Section 3** The interview on attitudes toward herbal plant conservation and development. There were 20 close-ended questions with 5 choices consisting of Considerably agree/ Agree/ Unsure/ Disagree/ Considerably disagree. These were positive and negative questions.

Score criteria

Positive questions: Considerably agree	5 scores
Agree	4 scores
Unsure	3 scores
Disagree	2 scores
Considerably disagree	1 score

Negative questions: Considerably agree	1 score
Agree	2 scores
Unsure	3 scores
Disagree	4 scores
Considerably disagree	5 scores

Score classifying criteria for the interview on attitudes toward herbal plant conservation and development were divided into 3 levels as follows;

Attitudes	Scores
Disagree	20-47
Unsure	48-73
Agree	74-100

**Section 4** The interview on participation of village health volunteers. There were close-ended questions with 5 choices consisting of Never/ Very little/ Occasionally/ Almost every time/ Every time.

The interview on participation was divided as input, process, and product. Question contents in the interview consisted of the following participation models; (1) Participation in decision making (2) Participation in implementation (3) Participation in benefits (4) Participation in evaluation

For example, the question of participation in Item 10, herbal plants were planted in your house area (2), the symbol (2) after the question meant the question of participation in implementation.

Score criteria for participation were considered from the following answers.

Never	1 score
Very little	2 scores
Occasionally	3 scores
Almost every time	4 scores
Every time	5 scores

Score classifying criteria for the interview on participation were divided into 3 levels as follows;

Participation level	Scores
Low	22-51
Moderate	52-80
High	81-110

**Section 5** The interview on problems, obstacles, and recommendations on herbal plant conservation and development of Soong-Nern district, Nakhonratchasima province. There were open-ended questions.

### 3.3.2 Quality data collection tool

The researcher collected quality data by using the in-depth interview to interview 12 committeemen of the Thai traditional medicine center, who are village health volunteers, village health volunteers in the studied area, and health officers of the health centers. The studied issues were as follows;

1. Herbal plant conservation and development roles of village health volunteers in the Thai traditional medicine centers
2. Background and herbal plant implementation of the Thai traditional medicine center
3. Problems and obstacles of herbal plant conservation and development
4. Recommendations and problem-solving guidelines

### 3.4 Tool Quality Examination Methods

1. The researcher sent the obtained interview to thesis advisory committee and experts to examine and correct the interview for content validity.
2. The researcher tried out the corrected interview with 40 village health volunteers who were not the sample group but lived in the same area as the sample group in Soong-Nern district, Nakhonratchasima province under the responsible area

of Kud Jik Health Center, Kud Jik sub-district, Ma Kluea Mai Health Center, Ma Kluea Mai sub-district, and Hin Tang Health Center, Sema sub-district.

3. The researcher checked the obtained interview in order to analyze and find tool quality as follows;

**1. Knowledge test form:** The researcher analyzed each item of the knowledge test form in order to find difficulty and easiness value and discrimination value by using the technique of 25% for the high group and the low group with calculation formula as follows; (Cited in Buntham Kijpreedaborisut, 1988:158).

$$P = \frac{P_H + P_L}{2n}$$

$$r = \frac{P_H - P_L}{n}$$

When  $P$  = Difficulty and easiness value

$r$  = Discrimination value

$n$  = Total number of respondents in the high group or the low group

$P_H$  = Number of respondents who correctly answered each item in the high group

$P_L$  = Number of respondents who correctly answered each item in the low group

After that, the researcher selected the items with the difficulty and easiness index value between 0.2-0.8 and discrimination value over 0.2 for real use. Analysis results found that 19 of 20 questions were under the criteria. The researcher corrected a question with the difficulty and easiness value which was slightly less than the criteria in order to obtain 20- item knowledge test form.

The researcher analyzed and found reliability value of knowledge test form by measuring internal constancy with the 20<sup>th</sup> formula of Kuder-Richardson as follows; (cited in Phuangrat Thaweerat, 1995:123)

$$\text{Formula: KR 20} \quad r_{tt} = \frac{n}{n-1} \left( \frac{\sum 1-pq}{S_t^2} \right)$$

When  $r_{tt}$  = Reliability value  
 $n$  = Number of items  
 $S_t^2$  = Score variance  
 $p$  = Proportion of respondents who correctly answered each item.  
 $q$  = Proportion of respondents who wrongly answered each item =  $1-p$

According to analysis results, reliability of the knowledge test form was 0.80 which was under the criteria because the good quality tool had to have reliability over 0.7 (Buntham Kijpreedaborisut, 1988:177)

**2. Attitudes test form:** The researcher analyzed and found discrimination by using the technique of 25% for the high group and the low group according to Likert's scale. The researcher tested difference between mean scores of the high group and the low group of each item by t-test (Cited in Phuangrat Thaweerat, 1995:132).

$$t = \frac{(\bar{x}_{q3} - \bar{x}_{i1})}{\sqrt{\frac{S_{i1}^2}{n_{q3}} + \frac{S_{q3}^2}{n_{i1}}}}$$

When

t = Value used in consideration of explanation by t

n = Number of people in each equal group

$\bar{x}_{\text{high}}$  = Mean scores of the high group

$\bar{x}_{\text{low}}$  = Mean scores of the low group

$S^2_{\text{high}}$  = Variance scores of the high group

$S^2_{\text{low}}$  = Variance scores of the low group

After that, the researcher selected the items with t over 2.0 which had fair discrimination for real use. Analysis results found that 20 items were under the criteria.

The researcher analyzed and found reliability of the attitudes test form by using Cronbach's Alpha Coefficient (Phuangrat Thaweerat, 2000:125-126). Reliability over 0.75 was used with the following formula;

$$\alpha = \frac{n}{n-1} \left[ 1 - \frac{\sum S^2_i}{S^2_t} \right]$$

After determining

$\alpha$  = Reliability of the test form

n = Total number of messages in the test form

$S^2_i$  = Variance of single item

$S^2_t$  = Variance of total item

According to analysis results, reliability of the interview was 0.796.

**3. Participation measurement form:** The researcher analyzed and found reliability by using Cronbach's Alpha Coefficient.

According to analysis results, reliability of the participation measurement form was 0.921.

### **3.5 Data Collection**

3.5.1 The researcher contacted state agencies and related experts in order to seek permission to collect data and ask for opinion. The researcher coordinated with related people in the area to ask for cooperation.

3.5.2 The researcher held the meeting to explain details of questions in the interview and details of the research to the research assistants so that they could clearly understand.

3.5.3 The researcher collected data during July 11-31, 2006 by using the interview and the in-depth interview with village health volunteers and the committee of the Thai traditional medicine centers, who are village health volunteers and health officers of the health centers. Moreover, the researcher collected data by studying various related documents.

### **3.6 Data Analysis and Statistics used in the Research**

After collecting data, the researcher examined completeness of the interview. After that, the researcher analyzed data by using Statistical Package for the Social Sciences (SPSS).

#### **3.6.1 Quality data analysis**

The researcher examined, analyzed, concluded, and arranged data derived from the in-depth interview and data derived from studying various related documents. The studied quality data were herbal plant conservation and development roles of village health volunteers in the Thai traditional medicine center, herbal plant implementation of the Thai traditional medicine center, and problems, obstacles, and recommendations on herbal plant conservation and development.

### 3.6.2 Quantitative data analysis

1. The researcher analyzed data on personal factors and social and economic factors by using statistics of percentage, mean, standard deviation, minimum, and maximum.

2. The researcher evaluated participation level by using statistics of percentage, mean, standard deviation, minimum, and maximum.

3. The researcher analyzed correlation between personal factors and social and economic factors and participation of village health volunteers in herbal plant conservation and development by using the following statistics;

3.1 Factors (independent variables) with nominal scale consisting of sex, educational level, occupation, being members of the herbal conservation group used the statistic of Chi-Square.

3.2 Factors (independent variables) with interval scale consisting of age, duration living in the community, working duration, knowledge, and attitudes used the statistic of Pearson Product Moment Correlation Coefficient.

4. The researcher analyzed, concluded, and arranged data derived from analysis for use as study results.

## CHAPTER 4

### RESEARCH RESULTS

As for this research, the researcher studied participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province. The researcher used the interview and knowledge test form to collect data from the sample group who was 180 village health volunteers in 3 sub-districts where there are Thai traditional medicine centers. The researcher could collect data from 138 village health volunteers (76.67%). The researcher analyzed such data with Statistical Package for the Social Sciences (SPSS). The research results were as follows;

- 4.1 Information on herbal plant conservation and development in the health centers of the target area
- 4.2 Information on populations and social and economic factors of the sample group
- 4.3 Information on herbal plant conservation and development of the sample group
- 4.4 Knowledge and knowledge level on herbal plant conservation and development
- 4.5 Attitudes and attitudes level on herbal plant conservation and development
- 4.6 Participation and participation level of village health volunteers
- 4.7 Information on participation on herbal plant conservation and development for village health volunteers in each sub-district
- 4.8 Analysis of correlation between personal factors, social and economic factors and participation on herbal plant conservation and development for village health volunteers

4.9 Methods and models of participation on herbal plant conservation and development

4.10 Village health volunteers' problems, obstacles, and recommendations on herbal plant conservation and development

## **4.1 Information on Herbal Plant Conservation and Development in the Health Centers of the Target Area**

### **4.1.1 Kud Jik Thai Traditional Medicine Center in the Kud Jik Health Center, Kud Jik sub-district**

Kud Jik Thai Traditional Medicine Center is situated in the Kud Jik Health Center, Kud Jik sub-district, Soong-Nern district, Nakhonratchasima province. This center has been established since 1998 by health officers of the health center and Village Health Volunteer Club under the support of Public Health Ministry and Soong-Nern Hospital in order to be the treatment alternative by using herbal plants, create income to village health volunteers, and promote herbal plant planting. The committee and members of the Kud Jik Thai Traditional Medicine Center consist of health officers of the health center, village health volunteers, and people in Kud Jik sub-district.

#### **Roles of the Kud Jik Thai Traditional Medicine Center**

1. Provide the services of sauna, massage, compression by using herbs.
2. Produce herbal compresses for use in the Thai traditional medicine center and distribution.
3. Produce herbal products such as Phlai oil, dish washing liquid, shampoo, hair conditioner, soap for use and distribution by purchasing herbal raw materials used in production from village health volunteers and people.
4. Plant herbal plants and promote herbal plant conservation.

#### **4.1.2 Ma Kluea Mai Community Health Center in the Ma Kluea Mai Health Center, Ma Kluea Mai sub-district**

The Ma Kluea Mai Community Health Center is situated in Ma Kluea Mai Health Center, Ma Kluea Mai sub-district, Soong-Nern district, Nakhonratchasima province. This center has been established since 2002 by health officers of the health center and Village Health Volunteer Club under the support of Public Health Ministry and Soong-Nern Hospital in order to be the treatment alternative such as herbal sauna and Thai massage for people who have muscle pain, create income to village health volunteers, and promote herbal plant planting. The committee and members of the Ma Kluea Mai Community Health Center consist of health officers of the health center, village health volunteers, and people in Ma Kluea Mai sub-district.

##### **Roles of the Ma Kluea Mai Community Health Center**

1. Provide the services of sauna, massage, compression by using herbs.
2. Train village health volunteers to have knowledge of herbs in daily life.
3. Coordinate between the community health center and people in the village.
4. Give knowledge of the Thai traditional medicine in the community health center.

#### **4.1.3 The Thai traditional medicine center in the Hin Tang Health Center, Sema sub-district**

The Hin Tang Thai Traditional Medicine Center is situated in the Hin Tang Health Center, Sema sub-district, Soong-Nern district, Nakhonratchasima province. This center has been established since 1998 by health officers of the health center and Village Health Volunteer Club under the support of Public Health Ministry and Soong-Nern Hospital in order to be the treatment alternative and promote herbal plant planting. The committee and members of the Hin Tang Thai

Traditional Medicine Center consist of health officers of the health center, village health volunteers, and people in Sema sub-district.

#### Roles of the Hin Tang Thai Traditional Medicine Center

1. Herbal compression
2. Provide the service of healthy herbal sauna.
3. Massage with oil for treatment.
4. Massage foot for health.
5. Plant herbal plants for extending breeds, using, and conserving for the next generation.

## 4.2 Information on Populations and Social and Economic Factors of the Sample Group

### 4.2.1 Information on populations

As for population characteristics of the sample group consisting of 138 people, 92.0% and 8.0% of the sample group were female and male, respectively. The oldest village health volunteer was 73 years old and the youngest village health volunteer was 26 years old. 36.2% of the sample group was 45-50 years old. 1.4% of the sample group was below 30 years old. For duration living in this district, 31.4% of the sample groups have lived in this district for 41-50 years. For working duration, 41.9% of the sample groups have been village health volunteers for 5-10 years.

For educational level, 58.0% of the sample group studied in the primary level. For occupation, 35.5% of the sample groups were rice farming, gardening, and orchard farming. For marital status, 79.7% of the sample groups were married.

In conclusion, most of the sample groups were female. Average age of the sample group was 46.19 years old. Most of the sample group studied in the primary level and have been village health volunteers for 5-10 years. Details were shown in the table 4-1.

**Table 4-1 :** Number and percent of the sample group classified by general characteristics

<b>General information characteristics</b>	<b>Number</b>	<b>Percent</b>
<b>Total number of the sample group</b>	<b>138</b>	<b>100.0</b>
<b>Sex</b>		
Male	11	8.0
Female	127	92.0
<b>Age</b>		
Below 30 years old	2	1.4
30-40 years old	41	29.7
41-50 years old	50	36.2
51-60 years old	38	27.5
Over 61 years old	7	5.1
Max=73, Min=26, Mean=46.19, Mode=55, S.D.= 9.382		
<b>Duration living in this district</b>		
Below 10 years	5	3.6
10-30 years	19	13.77
31-50 years	76	55.07
Over 51 years	38	27.54
<b>Working duration</b>		
Below 5 years	35	25.7
5-10 years	57	41.9
11-20 years	32	23.5
21-30 years	11	8.1
41-50 years	1	0.7

**Table 4-1 :** Number and percent of the sample group classified by general characteristics (Continued)

<b>General information characteristics</b>	<b>Number</b>	<b>Percent</b>
<b>Total number of the sample group</b>	<b>138</b>	<b>100.0</b>
<b>Highest education</b>		
Uneducated/below the primary level	4	2.9
Primary level	80	58.0
Lower secondary level/higher Secondary level	48	34.78
Vocational level		
High vocational level/diploma/ Bachelor degree	6	4.35
<b>Main occupation</b>		
Official/state staff	2	1.45
Private company employees/factory employees	16	11.59
Personal business/trading	28	20.29
Rice farming/gardening/orchard farming	49	35.5
Housewife/unemployed	43	31.16
Others (sewing, general hire of work, hairdressing)		
<b>Marital status</b>		
Single	9	6.5
Married	110	79.7
Divorced	1	0.7
Separated	4	2.9
Widowed	14	10.1

#### 4.2.2 Social and economic information

After studying land occupation ownership, the researcher found that 76.5% of the sample group own land and do not rent other people's land. 60.6% of the sample group uses their land for living and doing agriculture for trading (being exclusive of people who do agriculture for consumption in the family). Details were shown in the table 4-2.

**Table 4-2 :** Number and percent of the sample group classified by general characteristics

<b>General information characteristics</b>	<b>Number</b>	<b>Percent</b>
<b><i>Total number of the sample group</i></b>	<b><i>138</i></b>	<b><i>100.0</i></b>
<b>Land occupation ownership</b>		
Own the land and rent other people's land.	15	11
Own the land and do not rent other people's land	104	76.5
Do not own the land and rent other people's land	11	8.1
Do not own the land and do not rent other people's land (living with other people)	6	4.4
<b>The occupied land is used for</b>		
Living	39	28.5
Living and doing agriculture for trading by being exclusive of people who do agriculture for consumption in the family	83	60.6
Living and trading	12	8.8
Others (living, doing agriculture, trading, and leasing)	3	2.2

### 4.3 Information on Herbal Plant Conservation and Development

After studying about herbal plant conservation and development in the part of herbal plant conservation and planting, the researcher found that most of the sample group plant herbal plants for use as food, taking care of health, eliminating pests. Herbal plants considerably planted by village health volunteers are lemongrass, galanga, kaffir lime, ivy gourd, turmeric, aloe. Village health volunteers receive support about herbal plant conservation from Public Health Ministry and receive information on herbal plants from various agencies.

#### 4.3.1 Receipt of information on herbal plant conservation and development from various information sources

After studying about receipt of information on herbal plant conservation and development from various information sources, the researcher found that most of the sample groups receive information from health personnel, television, radio, and community leader, respectively. Details were shown in the table 4-3.

**Table 4-3 :** Number and percent of the sample group classified by the received information sources

Received information sources	Number	Percent
<i>Total number of the sample group</i>	<i>138</i>	<i>100.0</i>
Community leader	10	7.2
Teacher	3	2.2
Television	21	15.2
Health personnel	72	52.2
Local experts	4	2.9
Monks	4	2.9
Friends	2	1.4
Local wisdom	5	3.6
Radio	14	10.1
Newspaper	1	0.7

### **4.3.2 Information on herbal plant conservation and development promotion**

As for informing other people about the received information on herbal plant conservation and development, the researcher found that 51.0% of the sample group informs people in their family about information on herbal plants while 49.0% of the sample group informs their neighbors about the information on herbal plants. If related agencies want to increasingly disseminate the knowledge of herbal plant conservation and development, 45.8% of the sample group thought that the related agencies should disseminate knowledge by organizing the training. As for more knowledge of herbal plant conservation and development which the sample group wants, the researcher found that 46.3% of the sample group wants to know benefits and value of herbal plants, precaution, and correct use. 22.8% of the sample group wants to know village health volunteers' herbal plant conservation and development roles. As for being the members of the herbal plant conservation and development promotion group, the researcher found that 56.5% of the sample groups are not the group members while 43.5% of the sample groups are the group members. In the past 2 years, 86.2% of the sample group used to use herbal plants for treatment while 13.8% of the sample groups never use herbal plants for treatment. As for treatment result by using herbal plants, the researcher found that 77.2% of the sample group's treatment results are considerably better while 14.2% of the sample group's treatment results are slightly better. As for the reason why the sample groups use herbal plants for treatment, the researcher found that 41.5% of the sample groups use herbal plants for treatment because they trust and like to use herbal plants while 28.2% of the sample groups use herbal plants for treatment because they want to promote, disseminate, and train.

**Table 4-4 :** Number and percent of the sample group classified by general characteristics

<b>General information characteristics</b>	<b>Number</b>	<b>Percent</b>
<b>Informing the information on herbal plants</b>		
Total number of the sample group	257**	100.0
Informing people in the family about the information on herbal plants	131	51.0
Informing neighbors about the information on herbal plants	126	49.0
<b>Methods of disseminating the knowledge of herbal plants</b>		
Total number of the sample group	240	100.0
Newspaper	18	7.5
Journal/magazine	28	11.7
Television	41	17.1
Radio	29	12.1
Training	110	45.8
Others (health centers, study tour)	14	5.8
<b>More knowledge of herbal plants which the sample groups want</b>		
Total number of the sample group	259	100.0
Benefits, value, precaution, and use	120	46.3
Roles of participation on conservation and development	59	22.8
Development and conservation management guidelines	43	16.6
Problems of conservation and development	34	13.1
Others (planting, finding plant breeds, caring)	3	1.2

**Table 4-4 :** Number and percent of the sample group classified by general characteristics (Continued)

<b>General information characteristics</b>	<b>Number</b>	<b>Percent</b>
<b>Being members of the herbal plant conservation and development promotion group</b>		
Total number of the sample group	138	100.0
Not being the group members	78	56.5
Being the group members	60	43.5
<b>Using herbal plants for treatment in the past 2 years</b>		
Total number of the sample group	138	100.0
Never use	19	13.8
Used to use	119	86.2
<b>Treatment results by using herbal plants</b>		
Total number of the sample group	127	100.0
Get well completely	11	8.7
Be slightly better	18	14.2
Be considerably better	98	77.2

**Table 4-4 :** Number and percent of the sample group classified by general characteristics (Continued)

General information characteristics	Number	Percent
<b>Reasons of most of the sample group using herbal plants for treatment</b>		
Total number of the sample group	248	100.0
Promotion, dissemination, and training	70	28.2
There is no modern medical center near their houses.	3	1.2
They trust and like to use herbal plants.	103	41.5
Herbal doctors are friendly.	27	10.9
Herbal plants are cheap.	36	14.5
Others (Herbal plants are easily found. Herbal plants are used for initial treatment)	9	3.6

\*\*Total number of the sample group was over 138 people because respondents could select more than one answer.

## 4.4 Knowledge and Knowledge Level of Herbal Plant Conservation and Development

### 4.4.1 The sample group's knowledge of herbal plant conservation and development

After analyzing the table 8, the researcher found that the sample group's highest scores, lowest scores, and mean scores were 19 scores, 3 scores, and 12.25 scores from the full scores of 20 scores (61.25% of the full scores). This showed that the sample group had knowledge and understanding of herbal plant conservation and development in the moderate level. After considering each question, the researcher found that most of the sample group correctly answered the questions about benefits of herbal plants by 92.8% and pest elimination and prevention by 92.8%. Most of the sample group wrongly answered the question about the meaning of herbal plants by 84.1%.

**Table 4-5 :** Number and percent of the sample group's knowledge of herbal plant conservation and development classified in each item

Questions	Number	Percent
<b><i>Total number of the sample group</i></b>	<b><i>138</i></b>	<b><i>100.0</i></b>
<b>1. What does herbal plant mean?</b>		
Correct answer	22	15.9
Wrong answer	116	84.1
<b>2. Which item is the benefit of herbal plants?</b>		
Correct answer	128	92.8
Wrong answer	10	7.2

**Table 4-5 :** Number and percent of the sample group’s knowledge of herbal plant conservation and development classified in each item  
(Continued)

Questions	Number	Percent
<i>Total number of the sample group</i>	<b>138</b>	<b>100.0</b>
<b>3. Which item is the benefit of lemongrass?</b>		
Correct answer	79	57.2
Wrong answer	59	42.8
<b>4. Which item is the benefit of Thong Phan Chang?</b>		
Correct answer	26	18.8
Wrong answer	112	81.2
<b>5. Which item is the benefit of turmeric?</b>		
Correct answer	66	47.8
Wrong answer	72	52.2
<b>6. Which part of the clove is used in treating bloat?</b>		
Correct answer	39	28.3
Wrong answer	99	71.7
<b>7. Which part of cassumunar is used in suppressing muscle pain?</b>		
Correct answer	124	89.9
Wrong answer	14	10.1

**Table 4-5 :** Number and percent of the sample group's knowledge of herbal plant conservation and development classified in each item  
(Continued)

Questions	Number	Percent
<b>Total number of the sample group</b>	<b>138</b>	<b>100.0</b>
<b>8. Which herbal plant is used in treating bloat?</b>		
Correct answer	86	62.3
Wrong answer	52	37.7
<b>9. Which herbal plant is used in relieving cough and eliminating phlegm?</b>		
Correct answer	112	81.2
Wrong answer	26	18.8
<b>10. Which herbal plant is used in preventing and relieving the cold fever?</b>		
Correct answer	66	47.8
Wrong answer	72	52.2
<b>11. Which herbal plant is used in treating diarrhea?</b>		
Correct answer	83	60.1
Wrong answer	55	39.9
<b>12. Which item is allergy caused by use of herbal plants?</b>		
Correct answer	83	60.1
Wrong answer	55	39.9

**Table 4-5 :** Number and percent of the sample group’s knowledge of herbal plant conservation and development classified in each item  
(Continued)

Questions	Number	Percent
<b>Total number of the sample group</b>	<b>138</b>	<b>100.0</b>
<b>13. Suggestions on herbal use</b>		
Correct answer	111	80.4
Wrong answer	27	19.6
<b>14. Which item of using herbal plants is correct?</b>		
Correct answer	55	40.1
Wrong answer	82	59.9
<b>15. Which item of storing herbal plants is correct?</b>		
Correct answer	84	60.9
Wrong answer	54	39.1
<b>16. Which herbal plant is presently promoted by the basic health service ?</b>		
Correct answer	94	68.1
Wrong answer	44	31.9
<b>17. Which item of pest prevention and elimination is correct?</b>		
Correct answer	128	92.8
Wrong answer	10	7.2

**Table 4-5 :** Number and percent of the sample group's knowledge of herbal plant conservation and development classified in each item  
(Continued)

Questions	Number	Percent
<b>Total number of the sample group</b>	<b>138</b>	<b>100.0</b>
<b>18. Which item of attaching value to herbal plants is correct?</b>		
Correct answer	72	52.2
Wrong answer	66	47.8
<b>19. Which item may be a cause which reduces herbal plants?</b>		
Correct answer	123	89.1
Wrong answer	15	10.9
<b>20. Which item is a guideline of conserving herbal plants?</b>		
Correct answer	110	79.7
Wrong answer	28	20.3
Max = 19,	Min = 3 ,	
Mean = 12.25,	Mode = 12.00,	
S.D. = 2.38,	full scores = 20	

#### 4.4.2 Sample group's knowledge level of herbal plant conservation and development

After studying the knowledge level of herbal plant conservation and development by using the test with 20 full scores and classifying scores to divide the knowledge level according to the specified criteria, the researcher found that 68.1% of the sample group had knowledge in the moderate level. 30.4% of the sample group had knowledge in the high level. And 1.4% of the sample group had knowledge in the low level. Details were shown in the table 4-6.

**Table 4-6 :** Number and percent of the sample group classified by the knowledge level of herbal plant conservation and development

<b>Knowledge Level</b>	<b>Number</b>	<b>Percent</b>
<b><i>Total number of the sample group</i></b>	<b><i>138</i></b>	<b><i>100.0</i></b>
<b>The knowledge level of herbal plant conservation and development</b>		
Low (0 - 6 scores)	2	1.4
Moderate (7 – 13 scores)	94	68.1
High (14 – 20 scores)	42	30.4

## **4.5 Attitudes and Attitudes Level Toward Herbal Plant Conservation and Development**

### **4.5.1 The sample group's attitudes toward herbal plant conservation and development**

After analyzing the table 10 about attitudes toward herbal plant conservation and development, the researcher found that the sample group's highest scores, lowest scores, and mean scores were 100 scores, 60 scores, and 84.05 scores from the full scores of 100 scores ( 84.05% of the full scores). This showed that the sample group agreed with herbal plant conservation and development. After considering details of various messages about attitudes, the researcher found that most village health volunteers considerably agreed with the following attitudes; Encouraging people to take care of their health and rely on themselves by using herbal plants are very useful to people (48.6%). Implementation on the basic health service which encouraged correct use and planting of herbal plants was appropriate (53.6%). The project of encouraging herbal plant use and planting should be continuously implemented (48.6%). Planting herbal plants should be encouraged and developed (65.2%). There should be herbal gardens in every community basic health center (57.2%).

Most village health volunteers disagreed with the following attitudes; People who recommend other people to use and plant herbal plants are old-fashioned people (58.0%). Herbal plants should not be produced as finished medicine and cosmetics due to unsuitability in the present time (56.5%). As there are a lot of herbal plants in the forest, it is not necessary to plant them in the house (58.7%). People should not buy cosmetics such as soap, skin cream which have the components of herbal plants (52.2%). Caring health by herbal compression which helped better the body does not result from herbal plants but results from accidental event (44.9%).

**Table 4-7 :** Number and percent of the sample group’s attitudes toward herbal plant conservation and development classified in each item

Messages	Considerably agree	Agree	Unsure	Disagree	Considerably disagree
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
<b>Total number of the sample group = 138 people</b>					
1. Herbal plants are very necessary for people in the present time.	61 (44.2)	75 (54.3)*	2 (1.4)	0 (0)	0 (0)
2. To encourage people to take care of their health and rely on themselves by using herbal plants is very useful to people.	67 (48.6)*	62 (44.9)	6 (4.3)	2 (1.4)	1 (0.7)
3. Herbal plants should also be used in the modern medicine services.	55 (39.9)	80 (58.0)*	2 (1.4)	0 (0)	1 (0.7)
4. There should be herbal gardens in the villages.	62 (44.9)	74 (53.6)*	1 (0.7)	0 (0)	1 (0.7)
5. People who recommend other people to use and plant herbal plants are old-fashioned people.	18 (13.0)*	7 (5.1)	1 (0.7)	0 (0)	1 (0.7)
6. Every family should plant necessary herbs for use.	62 (44.9)	69 (50.0)*	4 (2.9)	2 (1.4)	1 (0.7)

**Table 4-7 :** Number and percent of the sample group's attitudes toward herbal plant conservation and development classified in each item  
(Continued)

Messages	Considerably agree	Agree	Unsure	Disagree	Considerably disagree
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
7. Herbal plants should not be produced as finished medicine cosmetics due to unsuitability in the present time.	1 (0.7)	20 (14.5)	17 (12.3)	78 (56.5)*	22 (15.9)
8. Treatment by using herbs helps save expenses in the family.	48 (34.8)	75 (54.3)*	11 (8.0)	2 (1.4)	2 (1.4)
9. As there are a lot of herbal plants in the forest, it is not necessary to plant herbal plants in the house area.	2 (1.4)	16 (11.6)	8 (5.8)	81 (58.7)*	31 (22.5)
10. Implementation on the basic health which encourages correct use and planting herbal plants is appropriate.	74 (53.6)*	59 (42.8)	4 (2.9)	0 (0)	1 (0.7)
11. The projects which encourage planting and use of herbs should be continuously done.	67 (48.6)*	64 (46.4)	5 (3.6)	1 (0.7)	1 (0.7)
12. Herbal plants are very necessary to the public health and medical field.	64 (46.4)	67 (48.6)*	3 (2.2)	2 (1.4)	2 (1.4)

**Table 4-7 :** Number and percent of the sample group’s attitudes toward herbal plant conservation and development classified in each item  
(Continued)

Messages	Considerably agree	Agree	Unsure	Disagree	Considerably disagree
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
13. If you have sufficient knowledge of herbal plants, you are ready to encourage, recommend use and planting of herbal plants.	43 (31.2)	78 (56.5)*	9 (6.5)	7 (5.1)	1 (0.7)
14. People should not buy cosmetics such as soap, skin cream which have components of herbal plants.	5 (3.6)	21 (15.2)	15 (10.9)	72 (52.2)*	25 (18.1)
15. Caring health by herbal compression which helps better the body does not result from herbal plants but results from accidental event.	9 (6.5)	22 (15.9)	24 (17.4)	62 (44.9)*	21 (15.2)
16. Production of health herbal products such as shampoo, soap helps reduce expenses and is effective.	60 (43.5)	69 (50.0)*	2 (1.4)	6 (4.3)	1 (0.7)

**Table 4-7 :** Number and percent of the sample group's attitudes toward herbal plant conservation and development classified in each item  
(Continued)

Messages	Considerably agree	Agree	Unsure	Disagree	Considerably disagree
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
17. Planting herbal plants should be encouraged and developed.	90 (65.2)*	48 (34.8)	0 (0)	0 (0)	0 (0)
18. To encourage people to use, plant, and develop herbal plant products saves the country budget.	53 (38.4)	78 (56.5)*	7 (5.1)	0 (0)	0 (0)
19. Officers and people in Nakhonratchasima province are encouraged to plant and use herbs.	47 (34.1)	86 (62.3)*	4 (2.9)	1 (0.7)	0 (0)
20. Herbal gardens should be planted in every community basic health center.	79 (57.2)*	56 (40.6)	2 (1.4)	1 (0.7)	0 (0)

Max = 100.00, Min = 60.00, Mean = 84.05,  
Mode = 82.00, S.D.= 6.99, Full scores = 100

### Remarks

# was negative messages.

\* was Mode. For example,

Item 1 Mode was Agree because \* was in a span of Agree.

Item 9 Mode was Disagree because \* was in a span of Disagree.

### 4.5.2 Attitudes level toward herbal plant conservation and development

**Table 4-8 :** Number and percent of the sample group classified by attitudes level toward herbal plant conservation and development

Attitudes level	Number	Percent
<b>Total number of the sample group</b>	<b>138</b>	<b>100.0</b>
Attitudes level toward herbal plant conservation and development		
Disagree (20-47 scores)	0	0.0
Unsure (48-73 scores)	4	2.9
Agree (74-100 scores)	134	97.1

According to the table 4-8, after studying attitudes level toward herbal plant conservation and development with the full scores of 100 scores and classifying scores to divide attitudes level according to the specified criteria, the researcher found that 97.1% of the sample group agreed while 2.9% of the sample group were unsure.

## **4.6 Participation and Participation Level of Village Health Volunteers in Herbal Plant Conservation and Development**

### **4.6.1 Participation of the sample group in herbal plant conservation and development**

After analyzing the table 12 on participation of village health volunteers in herbal plant conservation and development, the researcher found that the sample group's highest scores, lowest scores, and average scores were 97 scores, 27 scores, and 56.75 scores from the full scores of 110 scores (51.59 % from the full scores). This showed that the sample group participated in herbal plant conservation and development in the moderate level. Details were shown as follows;

The researcher found that no village health volunteers used to participate in herbal plant conservation and development every time. While, village health volunteers used to participate in herbal plant conservation and development almost every time as follows; Herbal plants are planted in village health volunteers' house area (68.8 %). Herbal gardens are planted in the community basic health center (56.5 %). Village health volunteers pick herbal plants in the suitable quantity for use (34.1 %). They correctly and suitably use herbal plants (34.1 %). They use the product such as shampoo produced from herbal plants in the community (29.7 %). They use herbal plants planted in their houses or their community for treatment (36.2 %).

Village health volunteers occasionally used to participate in herbal plant conservation and development as follows; Village health volunteers used to attend the meeting of promoting herbal plant knowledge to village health volunteers (39.9 %). They disseminate information and knowledge of herbal plants (33.3 %). They persuade other people to help preserve herbal plants (35.5 %). They recommend people or close people to plant herbal plants (37.7 %). They coordinate between people in the villages and officials to promote correct use and planting of herbal plants (37.7 %).

Most of village health volunteers never participate in herbal plant conservation and development as follows; They never produce herbal plant products for use in the work of the Thai traditional medicine center such as producing herbal compresses and herbal sauna sets (39.9 %). They never join the herbal plant conservation work group such as the lemongrass and cassumunar planting promotion group (33.3 %). They never plant herbal plants (52.9 %). They never pay for production of herbal plant products in the community (55.8 %). They never donate money to help campaign for herbal plant planting (55.8 %). They never produce herbal plant products for use or distribution such as shampoo, soap (56.5 %). They never buy herbal plant products from the producers for distribution (51.4 %). They never propose opinion on development of herbal plant products and herbal plant planting (47.1 %). They never suggest herbal plant products development and production methods (52.2 %). They never have more income through production of herbal plant products (59.4 %). They and the community never jointly make the herbal plant promotion project (37.0 %).

**Table 4-9 :** Number and percent of the sample group's participation in herbal plant conservation and development classified in each item

Questions	Every time	Almost every time	Occasionally	Very little	Never
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
<b>Total number of the sample group = 138 people</b>					
1. As a village health volunteer, you used to attend the meeting of promoting herbal plant knowledge to village health volunteers.	3 (2.2)	39 (28.3)	55 (39.9)*	6 (4.3)	35 (25.4)
2. You produce herbal plant products for use in the work of Thai traditional medicine center such as producing herbal compresses, herbal sauna sets.	8 (5.8)	35 (25.4)	34 (24.6)	6 (4.3)	55 (39.9)*
3. You join the herbal plant conservation work group such as lemongrass and cassumunar planting promotion group.	3 (2.2)	33 (23.9)	39 (28.3)	17 (12.3)	46 (33.33)*

**Table 4-9 :** Number and percent of the sample group’s participation in herbal plant conservation and development classified in each item  
(Continued)

Questions	Every time	Almost every time	Occasionally	Very little	Never
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
4. You plant herbal plants.	2 (1.4)	30 (21.7)	27 (19.6)	6 (4.3)	73 (52.9)*
5. You used to pay for production of herbal plant products in the community.	0 (0.0)	23 (16.7)	34 (24.6)	4 (2.9)	77 (55.8)*
6. You donate money to help campaign for herbal plant planting	0 (0.0)	19 (13.8)	40 (29.0)	2 (1.4)	77 (55.8)*
7. You used to produce herbal plant products for use or distribution such as shampoo, soap.	2 (1.4)	12 (8.7)	40 (29.0)	6 (4.3)	78 (56.6)*
8. You buy herbal plant products from the producers for distribution.	6 (4.3)	25 (18.1)	26 (18.8)	10 (7.2)	71 (51.4)*
9. You used to propose opinion on development of herbal plant products and herbal plant planting.	1 (0.7)	26 (18.8)	29 (21.0)	17 (12.3)	65 (47.1)*

**Table 4-9 :** Number and percent of the sample group's participation in herbal plant conservation and development classified in each item  
(Continued)

Questions	Every time	Almost every time	Occasionally	Very little	Never
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
10. Herbal plants are planted in your house area.	19 (13.8)	95 (68.8)*	11 (8.0)	14 (10.1)	12 (8.7)
11. Herbal gardens are planted in the community basic health center.	15 (10.9)	78 (56.5)*	19 (13.8)	14 (10.1)	12 (8.7)
12. You disseminate information and knowledge of herbal plants.	1 (0.7)	38 (27.5)	46 (33.3)*	10 (7.2)	43 (31.2)
13. You suggest herbal plant products development and production methods.	2 (1.4)	20 (14.5)	34 (24.6)	10 (7.2)	72 (32.2)*
14. You persuade other people to help preserve herbal plants.	2 (1.4)	40 (29.0)	49 (35.5)*	20 (14.5)	27 (19.6)
15. You recommend people or close people to plant herbal plants.	0 (0.0)	42 (30.4)	52 (37.7)*	21 (15.2)	23 (16.7)

**Table 4-9 :** Number and percent of the sample group's participation in herbal plant conservation and development classified in each item  
(Continued)

Questions	Every time	Almost every time	Occasionally	Very little	Never
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
16. You coordinate between people in the villages and officials to correct use and planting of herbal plants.	5 (3.6)	27 (19.6)	52 (37.7)*	20 (14.5)	34 (24.6)
17. You pick herbal plants in the suitable quantity for use	6 (4.3)	47 (34.1)*	34 (24.6)	7 (5.1)	44 (31.9)
18. You suitably and correctly use herbal plants	15 (10.9)	47 (34.1)*	42 (30.4)	11 (8.0)	23 (16.7)
19. You use the product such as shampoo produced from herbal plants in your community.	5 (3.6)	41 (29.7)*	40 (29.0)	24 (17.4)	28 (20.3)
20. You use herbal plants planted in your house area or your community for treatment.	8 (5.8)	50 (36.2)*	49 (35.5)	10 (7.2)	21 (15.2)

**Table 4-9 :** Number and percent of the sample group's participation in herbal plant conservation and development classified in each item  
(Continued)

Questions	Every time	Almost every time	Occasionally	Very little	Never
	Number (%)	Number (%)	Number (%)	Number (%)	Number (%)
21. You have more income through production of herbal plant products.	1 (0.7)	20 (14.5)	28 (20.3)	7 (5.1)	82 (59.4)*
22. You and the community jointly make the herbal plant promotion project	10 (7.2)	36 (26.1)	35 (25.4)	6 (4.3)	51 (37.0)*

Max= 97.00,      Min=27.00 ,      Mean= 56.75,  
Mode=65.00,      S.D.=16.31,      Full scores =110

**Remarks**

\* was Mode. For example,

Item 1 Mode was occasionally because \* was in a span of occasionally.

Item 9 Mode was Never because \* was in a span of Never.

#### 4.6.2 Participation level of village health volunteers in herbal plant conservation and development

After analyzing participation in herbal plant conservation and development and dividing participation level into 3 levels, the researcher found that 52.9% of the sample groups participate in herbal plant conservation and development in the moderate level. 39.1% of the sample group participates in herbal plant conservation and development in the low level. And 8.0% of the sample groups participate in herbal plant conservation and development in the high level.

**Table 4-10 :** Participation level of village health volunteers in herbal plant conservation and development

Participation level	Number	Percent
<b>Total number of the sample group</b>	<b>138</b>	<b>100.0</b>
Participation level in herbal plant conservation and development		
Low (22 – 51 scores)	54	39.1
Moderate (52 – 80 scores)	73	52.9
High (81 – 110 scores)	11	8.0

#### **4.7 Information on Participation on Herbal Plant Conservation and Development for Village Health Volunteers in Each Sub-district**

After studying the information on populations, participation, knowledge, and attitudes toward herbal plant conservation and development of village health volunteers in each sub-district, the researcher found that Kud Jik sub-district and Sema sub-district participate in herbal plant conservation and development in the moderate level. Ma Kluea Mai sub-district participate in herbal plant conservation and development in the low level. In Ma Kluea Mai sub-district, 8.7% of village health volunteers who were the sample group are members of the herbal plant conservation promotion group. Details were shown in the table 4-11.

**Table 4-11 :** Information on participation level in herbal plant conservation and development for village health volunteers in each sub-district

Village health volunteers' information	Kud Jik Sub-district		Ma Kluea Mai Sub-district		Sema Sub-district	
	Number	Percent	Number	Percent	Number	Percent
	<b>Sex</b>					
Male	3	6.5	2	4.3	6	13.0
Female	43	93.5	44	95.7	40	87.0
Total	46	100.0	46	100.0	46	100.0
<b>Sample size by calculation</b>	46	100.0	71	100.0	63	100.0
Percent	46	100.0	46	64.79	46	73.02
<b>Being members of the herbal plant conservation promotion group</b>						
Not being members	8	17.4	42	91.3	28	60.9
Being members	38	82.6	4	8.7	18	39.1
Total	46	100.0	46	100.0	45	100.0
<b>Knowledge's mean score</b>	12.30	61.5	12.24	61.2	12.22	61.1
		Moderate		Moderate		Moderate
Full scores	20	100.0	20	100.0	20	100.0
<b>Knowledge level</b>						
Low	2	4.3	0.00	0.00	0.00	0.00
Moderate	25	54.3	34	73.9	35	76.1
High	19	41.3	12	26.1	11	23.9

**Table 4-11 :** Information on participation level in herbal plant conservation and development for village health volunteers in each sub-district  
(Continued)

Village health volunteers' information	Kud Jik Sub-district		Ma Kluea Mai Sub-district		Sema Sub-district	
	Number	Percent	Number	Percent	Number	Percent
<b>Attitudes' mean score</b>	82.67	82.67 (เห็นด้วย)	84.54	84.54 (เห็นด้วย)	84.93	84.93 (เห็นด้วย)
Full scores	100.0	100.0	100.0	100.0	100.0	100.0
<b>Attitudes level</b>						
Disagree	0.00	0.00	0.00	0.00	0.00	0.00
Unsure	2	4.3	2	4.3	0.00	0.00
Agree	44	95.7	44	95.7	46	100.0
<b>Participation's mean scores</b>	62.78	57.07 (ปานกลาง)	50.78	46.16 (น้อย)	56.70	51.54 (ปานกลาง)
Full scores	110	100.0	110	100.0	110	100.0
<b>Participation level</b>						
Low	10	21.7	24	52.2	20	43.5
Moderate	30	65.2	20	43.5	23	50.0
High	6	13.0	2	4.3	3	6.5

## 4.8 Analysis of Correlation between Personal Factors, Social and Economic Factors and Participation on Herbal Plant Conservation and Development for Village Health Volunteers

### 4.8.1 Correlation between personal factors and participation on herbal plant conservation and development for village health volunteers

After testing correlation between sex and participation on herbal plant conservation and development for village health volunteers, the researcher found that sex did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. Men's participation on herbal plant conservation and development was not different from women's participation on herbal plant conservation and development. So, participation on herbal plant conservation and development for village health volunteers did not depend on sex. Details were shown in the table 4-12.

**Table 4-12 :** Test of correlation between sex, educational level, main occupation and participation on herbal plant conservation and development for village health volunteers

Variables	Participation on herbal plant conservation and development for the sample group		
	Chi-Square T	D.F.	Significance
Sex	0.709	2	0.806
Educational level	1.644	6	0.977
Main occupation	3.318	8	0.912

After testing correlation between educational level and participation on herbal plant conservation and development for village health volunteers, the researcher found that educational level did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. If educational level was different, participation on herbal plant conservation and development was

not different. So, participation on herbal plant conservation and development for village health volunteers did not depend on educational level.

After testing correlation between main occupation and participation on herbal plant conservation and development for village health volunteers, the researcher found that main occupation did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. If main occupation was different, participation on herbal plant conservation and development was not different. So, participation on herbal plant conservation and development for village health volunteers did not depend on main occupation.

**Table 4-13 :** Test of correlation between age, duration living in the community, working duration, knowledge, attitudes and participation on herbal plant conservation and development for village health volunteers

Variables	Participation on herbal plant conservation and development	
	Correlation Coefficient ( r )	Significant level ( p )
Age	0.250	0.110
Duration living in the community	0.194	0.147
Working duration	0.060	0.883
Knowledge	0.109	0.050*
Attitudes	-0.088	0.224

\*  $p \leq 0.05$

According to the table 4-13, after analyzing correlation between age and participation on herbal plant conservation and development for village health volunteers, the researcher found that age did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. If age was different, participation on herbal plant conservation and development was not

different. So, participation on herbal plant conservation and development for village health volunteers did not depend on age. After analyzing correlation between duration living in the community and participation on herbal plant conservation and development for village health volunteers, the researcher found that duration living in the community did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. If duration living in the community was different, participation on herbal plant conservation and development was not different. So, participation on herbal plant conservation and development for village health volunteers did not depend on duration living in the community.

After analyzing correlation between working duration and participation on herbal plant conservation and development for village health volunteers, the researcher found that working duration did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. If working duration was different, participation on herbal plant conservation and development was not different. So, participation on herbal plant conservation and development for village health volunteers did not depend on working duration.

After analyzing correlation between knowledge and participation on herbal plant conservation and development for village health volunteers, the researcher found that knowledge correlated with participation on herbal plant conservation and development at the significant level of 0.05. If knowledge was different, participation on herbal plant conservation and development was also different. So, participation on herbal plant conservation and development for village health volunteers depended on knowledge by having correlation value of 0.109 which showed that the correlation was in the same direction. If village health volunteers had more knowledge of herbal plants, they would have more participation on herbal plant conservation and development than those who had less knowledge.

After analyzing correlation between attitudes and participation on herbal plant conservation and development for village health volunteers, the researcher

found that attitudes did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. If attitudes were different, participation on herbal plant conservation and development was not different. So, participation on herbal plant conservation and development for village health volunteers did not depend on attitudes.

#### 4.8.2 Correlation between social and economic factors and participation on herbal plant conservation and development for village health volunteers

**Table 4-14 :** Test of correlation between land occupation ownership, being members of the herbal conservation promotion group and participation on herbal plant conservation and development for village health volunteers

Variables	Participation on herbal plant conservation and development for the sample group		
	Chi-Square T	D.F.	Significance
Land occupation ownership	27.962	6	0.001*
Being members of the herbal conservation promotion group	19.350	2	0.000*

Significance < 0.05

According to the table 4-14, after testing correlation between land occupation ownership and participation on herbal plant conservation and development for village health volunteers, the researcher found that land occupation ownership correlated with participation on herbal plant conservation and development at the significant level of 0.05. If land occupation ownership was different, participation on herbal plant conservation and development was also different. So, participation on herbal plant conservation and development for village health volunteers depended on land occupation ownership.

After testing correlation between being members of the herbal conservation promotion group and participation on herbal plant conservation and development for village health volunteers, the researcher found that being members of the herbal conservation promotion group correlated with participation on herbal plant conservation and development at the significant level of 0.05. Village health volunteers who are members of the herbal conservation promotion group and are not members of the herbal conservation promotion group differently participate in herbal plant conservation and development. So, participation on herbal plant conservation and development for village health volunteers depended on being members of the herbal conservation promotion group. Village health volunteers who are the group members have more participation on herbal plant conservation and development than village health volunteers who are not the group members.

**Table 4-15 :** Test of correlation between receipt of information from health personnel and participation on herbal plant conservation and development for village health volunteers

Variables	Participation on herbal plant conservation and development	
	Correlation Coefficient ( r )	Significant level ( p )
Receipt of information from health personnel	0.052	0.910

\*  $p \leq 0.05$

According to the table 4-15, after analyzing correlation between receipt of information from health personnel and participation on herbal plant conservation and development for village health volunteers, the researcher found that receipt of information from health personnel did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. If receipt of

information from health personnel was different, participation on herbal plant conservation and development was not different. So, participation on herbal plant conservation and development for village health volunteers did not depend on receipt of information from health personnel.

#### 4.8.3 Factors which correlated with participation on herbal plant conservation and development for village health volunteers

After analyzing correlation between personal factors, social and economic factors and participation on herbal plant conservation and development for village health volunteers, the researcher found that factors which correlated with participation on herbal plant conservation and development were being members of the herbal conservation promotion group, land occupation ownership, knowledge. Details were shown in the table 4-16.

**Table 4-16 :** Factors which correlated with participation on herbal plant conservation and development for village health volunteers

Variables	Participation on herbal plant conservation and development for the sample group		
	Chi-Square T	D.F.	Significance
Land occupation ownership	27.962	6	0.001
Being members of the herbal conservation promotion group	19.350	2	0.000

Variables	Participation on herbal plant conservation and development	
	Correlation Coefficient (r)	Significant level (p)
Knowledge	0.109	0.050

### 4.9 Methods and Models of Participation on Herbal Plant Conservation and Development

After studying the methods of participation on herbal plant conservation and development according to the system theory conceptual framework, which consisted of input, process, and product, the researcher found that 57.77 % of village health volunteers participate in the process while 54.4 % of village health volunteers participate in the product. As for the models of participation on herbal plant conservation and development for village health volunteers, which consisted of participation in decision making, participation in implementation, participation in benefits, and participation in evaluation, the researcher found that 55.6% of village health volunteers participate in decision making while 53.29% of village health volunteers participate in implementation. Details were shown in the table 4-17.

**Table 4-17 :** Participation’s mean scores and percent of the sample group’s scores according to methods and models of participation on herbal plant conservation and development

Participation characteristics	Mean scores	Full scores	Percent
<b>Total number of the sample group</b> = 138 people			
<b>Participation methods</b>			
Input	20.22	45	44.93
Process	20.22	35	57.77
Product	16.32	30	54.4
<b>Participation models</b>			
Participation in decision making	2.78	5	55.6
Participation in implementation	37.30	70	53.29
Participation in benefits	11.92	25	47.68
Participation in evaluation	4.76	10	47.6

#### 4.10 Village Health Volunteers' Problems, Obstacles, and Recommendations on Herbal Plant Conservation and Development

After studying village health volunteers' problems, obstacles, recommendations, and opinion on herbal plant conservation and development, the researcher found that village health volunteers had problem, obstacles, recommendations, and opinion as shown in the table 4-18.

**Table 4-18 :** Village health volunteers' problems, obstacles, recommendations, and opinion on herbal plant conservation and development

<b>Problems and obstacles</b>	
1.	As people do not have knowledge of using herbal plants, they do not use and plant herbal plants.
2.	Some village health volunteers do not have enough areas to plant herbal plants.
3.	People do not want to use herbal plants because they do not see value and importance of herbal plants.
4.	Planting herbal plants in little quantity is not sufficient for use in producing herbal plant products and being food ingredients
5.	Some villages do not have the herbal plant conservation promotion group.
6.	Some communities do not have fund and budget for herbal plant conservation and development.

**Table 4-18 :** Village health volunteers' problems, obstacles, recommendations, and opinion on herbal plant conservation and development (Continued)

<b>Recommendations and opinion</b>	
1.	The training of herbal plant conservation and development should be continuously organized in order to make village health
2.	Every family should plant and conserve herbal plants for continuous use.
3.	The training of herbal plant conservation and development should be widely organized in order to make village health volunteers have correct knowledge of benefits and value of herbal plants and know roles of participation on herbal plant conservation and development.
4.	If people use herbal plants or destroy herbal plants, they must increasingly plant these plants in the sufficient quantity for conservation and use in the future.
5.	These villages should establish the herbal plant conservation promotion group.
6.	There should be an agency which continuously encourages herbal plant conservation and development such as budget, providing herbal plant breeds.

## CHAPTER 5

### DISCUSSION

The researcher separately discussed the research results of participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province according to the following objectives;

1. To study participation level on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province.
2. To study factors which correlated with participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province.
3. To analyze herbal plant conservation and development methods of village health volunteers in Soong-Nern district, Nakhonratchasima province.

#### **1. Participation level on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province**

The research results found that participation on herbal plant conservation and development for village health volunteers was in the moderate level. This was consistent with Chairote Thanasanti's research results (1992:112) which concluded that participation of the sub-district council committee in natural resource conservation in Ubon Ratchathani province was in the moderate level. Moreover,

Suwanee Khongthong's research results found that participation of people in the community mangrove forest conservation in Si Kao district, Trang province was in the moderate level. According to this research, the sample group's average scores were 56.75 scores of the full scores of 110 scores (51.59% of the full scores). The researcher could conclude that village health volunteers' participation on herbal plant conservation and development was in the moderate level.

## **2. Factors which correlated with participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province**

Correlation between sex and participation on herbal plant conservation and development for village health volunteers

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on sex. This meant that sex did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Sujin Daoweerakul's research results of factors which affected participation of people in the village development project : Case Study of 1984's outstanding village in Nakhon Sawan province (1984: Abstract). His research results found that sex did not affect participation level of people in the village development project.

Correlation between educational level and participation on herbal plant conservation and development for village health volunteers

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on educational level. This meant that educational level did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent

with Wimonrat Seesing's research results (1995:22) which found that educational level did not correlate with participation of Kanchanaburi women group in natural resource conservation. Participation did not depend on educational level because receipt of the training, receipt of information, and informal learning led to cooperation in participation.

Correlation between main occupation and participation on herbal plant conservation and development for village health volunteers

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on main occupation. This meant that main occupation did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Sujin Daoweerakul's research results of factors which affected participation of people in the village development project : Case Study of 1984' s outstanding village in Nakhon Sawan province (1984: Abstract). His research results found that occupation did not affect participation level in the village development project.

Correlation between age and participation on herbal plant conservation and development for village health volunteers

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on age. This meant that age did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Seeparinya Thoopkrajang's research results of participation of developers in rural environment quality maintenance and encouragement. His research results found that age did not correlate with such participation.

Correlation between duration living in the community and participation on herbal plant conservation and development for village health volunteers.

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on duration living in the community. This meant that duration living in the community did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Suppharaphorn Thammachart's research results of participation of local people in the coastal resource conservation : Case Study of La-ngu district, Satun province (1998:115). Her research results found that duration living in the locality did not correlate with participation of local people in the coastal resource conservation.

Correlation between working duration and participation on herbal plant conservation and development for village health volunteers.

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on working duration. This meant that working duration did not correlate with participation on herbal plant conservation and development at the significant level of 0.05 due to much difference of number of the sample group. 41.9% of the sample group used to be village health volunteers for 5-10 years while 0.7% of the sample group used to be village health volunteers for 41-50 years. Therefore, such analysis results did not have any correlation.

Correlation between knowledge and participation on herbal plant conservation and development for village health volunteers

The research results found that participation on herbal plant conservation and development for village health volunteers depended on knowledge. This meant that knowledge correlated with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Sansana Tantichart's research results of participation of the sub-district council committee in the small water resources development project, Kalasin province (1990:66-68). The

research results found that receipt of the training about the water resource caused different participation in the small water resource development.

Correlation between attitudes and participation on herbal plant conservation and development for village health volunteers.

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on attitudes. This meant that attitudes did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Ubonwan Serbyubon's research results of some factors which influenced participation in dwelling development: Case Study of low income people's resettlement in the Nakhon Bangbua Project, Bangkok Metropolitan (1986:Abstract). The research results found that pride in the community did not correlate with participation in dwelling development.

Correlation between land occupation ownership and participation on herbal plant conservation and development for village health volunteers.

The research results found that participation on herbal plant conservation and development for village health volunteers depended on land occupation ownership. This meant that land occupation ownership correlated with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Witchuda Singto's research results (1987:Abstract) which found that dwelling ownership caused different participation of people in the "Phithaksa" Child Development Center, Amornthayikararm Temple Community.

Correlation between receipt of information from health personnel and participation on herbal plant conservation and development for village health volunteers

The research results found that participation on herbal plant conservation and development for village health volunteers did not depend on receipt of information from health personnel. This meant that receipt of information from health personnel did not correlate with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Seeparinya Thoopkrajang's research results of participation of developers in rural environment quality maintenance and encouragement (1986:Abstract). His research results found that receipt of information did not correlate with such participation.

Correlation between being members of the herbal conservation promotion group and participation on herbal plant conservation and development for village health volunteers

The research results found that participation on herbal plant conservation and development for village health volunteers depended on being members of the herbal conservation promotion group. This meant that being members of the herbal conservation promotion group correlated with participation on herbal plant conservation and development at the significant level of 0.05. This was consistent with Chairote Thanasanti's research results (1992:122) which found that people with status in the sub-district was a factor which affected participation in natural resource conservation.

### **3. Herbal plant conservation and development methods of village health volunteers in Soong-Nern district, Nakhonratchasima province**

The researcher studied herbal plant conservation and development methods of the sample group according to participation on herbal plant conservation and development as follows;

1. Input is herbal plant conservation and development methods consisting of 4 administration basic factors: human, management, materials, and money.

2. Process is herbal plant conservation and development methods consisting of process or activities for participation on herbal plant conservation and development such as planting herbs, taking care of herbs.

3. Product is herbal plant conservation and development methods consisting of total results of implementation for participation on herbal plant conservation and development, which consisted of product, income, impact such as establishment of the herbal promotion project

### **1. Input**

As for attending the meeting of promotion of knowledge of herbal plants to village health volunteers, the researcher found that most of the sample group occasionally used to attend the meeting while some of the sample group used to attend the meeting about once a year. The meeting of promotion of knowledge of herbal plants to village health volunteers was usually held twice a year.

As for production of herbal plant products for use in the work of the Thai traditional medicine center such as herbal compresses and herbal sauna sets, the researcher found that most of the sample group never produced such products while some of the sample group used to produce such products almost every time. Herbal plant products for use in the work of the Thai traditional medicine center such as herbal sauna sets were usually produced twice a month.

As for participation in the herbal plant conservation work group such as cassumunar and lemongrass planting promotion group, the researcher found that most of the sample group never participated in such work group while some of the sample group occasionally used to participate in such work group.

As for planting herbal plants, the researcher found that most of the sample group never planted herbal plants while some of the sample group used to plant herbal plants almost every time.

As for paying for production of herbal plant products in the community, the researcher found that most of the sample group never paid for such production while some of the sample group occasionally used to pay for such production. People usually paid for such production twice a month.

As for donating money to campaign for herbal plant planting, the researcher found that most of the sample group never donated money to campaign for herbal plant planting while some of the sample group occasionally used to donate money to campaign for herbal plant planting.

As for production of herbal plant products for use or distribution such as shampoo, soap, the researcher found that most of the sample group never produced such products for use or distribution while some of the sample group occasionally used to produce such products for use or distribution. People usually produced such products for use or distribution about once a month.

As for buying herbal plant products from the producers for distribution, the researcher found that most of the sample group never bought such products from the producers for distribution while some of the sample group occasionally used to buy such products from the producers for distribution.

As for proposing opinion on herbal plant products development and herbal plant planting, the researcher found that most of the sample group never proposed such opinion while some of the sample group occasionally used to propose such opinion. The meeting for proposing opinion was usually held twice a year.

## 2. Process

As for planting herbal plants in the house area, the researcher found that most of the sample group used to plant herbal plants in the house area almost every time while some of the sample group used to plant herbal plants in the house area every time. People usually planted herbal plants for use and also conserved herbal plants.

As for planting herbal gardens in the community basic health center, the researcher found that most of the sample group used to plant herbal gardens in the community basic health center almost every time while some of the sample group occasionally used to plant herbal gardens in the community basic health center. People usually took turn to take care of herbal gardens.

As for dissemination of information and knowledge of herbal plants, the researcher found that most of the sample group occasionally used to disseminate information and knowledge of herbal plants while some of the sample group never disseminated information and knowledge of herbal plants and some of the sample group used to disseminate information and knowledge of herbal plants almost every time. The meeting for dissemination of information and knowledge of herbal plants was usually held twice a year.

As for suggestion on herbal plant product development and production methods, the researcher found that most of the sample group never suggested about such methods while some of the sample group occasionally used to suggest about such methods. The meeting was usually held about twice a year.

As for persuading other people to help take care of herbal plants, the researcher found that most of the sample group occasionally used to persuade other people to help take care of herbal plants while some of the sample group used to persuade other people to help take care of herbal plants almost every time. The sample group persuaded other people to help take care of herbal plants when they had a chance or there was shortage of herbal plants.

As for recommending people or close people to plant herbal plants, the researcher found that most of the sample group occasionally used to recommend while some of the sample group used to recommend almost every time. The sample group recommended people or close people to plant herbal plants when they had a chance or there was shortage of herbal plants.

As for coordination between people in the village and officers to promote correct use and planting of herbal plants, the researcher found that most of the sample group occasionally used to coordinate while some of the sample group never coordinated.

### **3. Product**

As for picking herbs in the suitable quantity for use, the researcher found that most of the sample group used to pick almost every time while some of the sample group never picked.

As for correct and suitable use of herbal plants, the researcher found that most of the sample group used to correctly and suitably use almost every time while some of the sample group occasionally used to correctly and suitably use.

As for use of the product such as shampoo produced from herbal plants planted in the sample group's community, the researcher found that most of the sample group used to use such product almost every time while some of the sample group occasionally used to use such product. People usually produced herbal plant products for use or distribution about once a month.

As for use of herbal plants planted in the house area or the sample group's community for treating illness, the researcher found that most of the sample group used to use almost every time while some of the sample group occasionally used to use.

As for production of herbal plant products which created more income, the researcher found that most of the sample group never produced such products which created more income while some of the sample group occasionally used to produce such products which created more income. People usually produced herbal plant products for use or distribution about once a month.

As for village health volunteers and the community jointly making the herbal promotion project, the researcher found that most of the sample group never made such project while some of the sample group occasionally used to make such project almost every time. Village health volunteers and people made the herbal promotion project or jointly implemented the project twice a year.

According to herbal plant development and conservation methods of village health volunteers, the researcher could conclude the research results as follows;

Herbal plant conservation and development methods which most of village health volunteers used to do almost every time or frequently were as follows; Herbal plants were planted in village health volunteers' house area. Herbal gardens were planted in the community basic health center. Village health volunteers picked herbs in the suitable quantity for use. Village health volunteers correctly and suitably used herbal plants. Village health volunteers used the product such as shampoo produced from herbal plants planted in their community. Village health volunteers used herbal plants planted in their house area or their community for treating illness.

Herbal plant conservation and development methods which most of village health volunteers occasionally used to do were as follows; attending the meeting of promotion of knowledge of herbal plants to village health volunteers, disseminating information and knowledge of herbal plants, persuading other people to help take care of herbal plants, recommending people or close people to plant herbal plants, coordinating between people in the village and officers to promote correct use and planting of herbal plants.

## CHAPTER 6

### CONCLUSIONS AND RECOMMENDATIONS

The research on participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province was a survey research with the following objectives;

1. To study factors which correlated with participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province.
2. To analyze herbal plant conservation and development methods of village health volunteers in Soong-Nern district, Nakhonratchasima province.
3. To study problems, obstacles, and recommendations on participation on herbal plant conservation and development for village health volunteers in Soong-Nern district, Nakhonratchasima province.

Researched populations were village health volunteers working in the community basic health center. The researcher found the sample group size by using Yamane's formula. The sample group derived from calculation was 180 people. As for number of the sample group studied in each sub-district and each village, the researcher calculated according to proportion of number of village health volunteers living in the responsible area of 3 health centers situated in each sub-district and each village.

Tools used in the research were the interview and test which the researcher created and developed according to research objectives and theoretical

principles. The researcher also corrected the tools from related researches. The tools were examined accuracy, clearness, and correctness of words by 3 experts. The researcher corrected the tools after trying out the tools with 40 people who were not the sample group in order to test the tool quality and examine words of the interview until the researcher received the quality tools.

The researcher and the researcher's team totaling 4 people collected data and individually interviewed during July 11-31, 2006. The researcher could collect data by 76.67%.

The researcher analyzed data with Statistical Package for the Social Sciences (SPSS) by using the following statistics; The researcher analyzed personal factors and social and economic factors by using percentage, mean, standard deviation (S.D.), minimum (min), and maximum (max). The researcher analyzed correlation between personal factors and social and economic factors and participation on herbal plant conservation and development for village health volunteers by using the following statistics; Chi-Square was used for the factors with nominal scale (independent variables) such as sex, educational level, occupation, being members of the herbal conservation promotion group. Pearson Product Moment Correlation Coefficient was used for the factors with interval scale (independent variables) such as duration living in the community, working duration, knowledge, attitudes, and receipt of information.

### **Research results conclusion**

1. General characteristics of populations, economy, society, knowledge and attitudes

The sample group consisted of 138 people. 92.0% of the sample group was female while 8.0% were male. Average age of the sample group was 46.19 years old. As for main occupation of the sample group, 35.5% of the sample

groups were rice farming, gardening, and orchard farming. As for marital status, 79.7% of the sample groups were married. As for education, most of the sample group studied in the primary level and have been village health volunteers for 5-10 years.

As for land occupation ownership, the researcher found that 76.5% of the sample group owned the land and did not rent other people's land. 60.6% of the sample group used the occupied land for living and doing agriculture for trading (excluding people doing agriculture for consumption in the family). As for receipt of information on herbal plant conservation and development from various information sources, the researcher found that the sample group received information from health personnel, television, radio, and community leader, respectively.

As for informing other people about the information on herbal plant conservation and development, the researcher found that 51.0% of the sample group informed people in their family while 49.0% of the sample group informed their neighbors. As for related agencies which wanted to increasingly disseminate the knowledge of herbal plant conservation and development, 45.8% of the sample group thought that such agencies should disseminate by training. As for more knowledge of herbal plant conservation and development which the sample group wanted, the researcher found that 46.3% of the sample group wanted to know benefits and value of herbal plants, precaution, and correct use. While, some of the sample group wanted to know village health volunteers' roles of participation in herbal plant conservation and development.

As for being members of the herbal plant conservation and development promotion group, the researcher found that 56.5% of the sample groups were not the group members while 43.5% of the sample groups were the group members. In the past 2 years, 86.2% of the sample group used to use herbal plants to treat disease while 13.8% of the sample group never used herbal plants to treat disease. As for treatment results by using herbs, the researcher found that 77.2% of

the sample group's treatment results were considerably better while some of the sample group's treatment results were slightly better. After studying that why the sample group used herbs to treat disease, the researcher found that 41.5% of the sample group used herbs to treat disease because they trusted and liked to use while some of the sample group used herbs to treat disease because they wanted to promote, disseminate, and train.

As for knowledge, the researcher found that 68.1% of the sample group had the knowledge of herbal plant conservation and development in the moderate level with average scores of 12.25 scores of the full scores of 20 scores. 30.4% of the sample group had knowledge in the high level. 1.4% of the sample group had knowledge in the low level. As for attitudes level toward herbal plant conservation and development, the researcher found that 97.1% of the sample group agreed with such attitudes with average scores of 84.05 scores of the full scores of 100 scores (84.05% of the full scores). This showed that the sample group agreed with such attitudes.

2. Participation on herbal plant conservation and development for village health volunteers was in the moderate level with average scores of 56.75 scores of the full scores of 110 scores (51.59% of the full scores).

3. After analyzing correlation between personal factors, social and economic factors and participation on herbal plant conservation and development for village health volunteers, the researcher found that factors which correlated with participation on herbal plant conservation and development were as follows; being members of the herbal plant conservation promotion group, land occupation ownership, knowledge.

3.1 Correlation between personal factors such as sex, education, knowledge, attitudes and participation on herbal plant conservation and development for village health volunteers

As for sex, the research results found that sex did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

As for educational level, the research results found that educational level did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

As for main occupation, the research results found that main occupation did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

As for age, the research results found that age did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

As for duration living in the community, the research results found that duration living in the community did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

As for working duration, the research results found that working duration did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

As for knowledge, the research results found that knowledge correlated with participation on herbal plant conservation and development at the significant level of 0.05 with the correlation coefficient of 0.109 which meant positive correlation. People with more knowledge had more participation on herbal plant conservation and development.

As for attitudes, the research results found that attitudes did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

3.2 Correlation between social and economic factors: land occupation ownership, receipt of information from health personnel, being members of the herbal plant conservation promotion group and participation on herbal plant conservation and development for village health volunteers

As for land occupation ownership, the research results found that land occupation ownership correlated with participation on herbal plant conservation and development at the significant level of 0.05. The sample group who owned the land and rented other people's land most participated in herbal plant conservation and development while some of the sample group who owned the land and did not rent other people's land participated in herbal plant conservation and development.

Receipt of information from health personnel, the research results found that receipt of information from health personnel did not correlate with participation on herbal plant conservation and development at the significant level of 0.05.

As for being members of the herbal conservation promotion group, the research results found that being members of the herbal conservation promotion group correlated with participation on herbal plant conservation and development at the significant level of 0.05. Village health volunteers who were members of the herbal conservation promotion group had more participation in herbal plant conservation and development than village health volunteers who were not members of the herbal plant conservation promotion group.

4. After studying methods of participation in herbal plant conservation and development, the researcher found that 57.77% of village health volunteers participated in the process while 54.4% participated in the product. As for

participation model, the researcher found that 55.6% of village health volunteers participated in decision making while 53.29% participated in implementation.

The research results found that herbal plant conservation and development methods which most of village health volunteers used to do frequently or almost every time were as follows; Herbal plants were planted in village health volunteers' house area. Herbal gardens were planted in the community basic health center. Village health volunteers picked herbs in the suitable quantity for use. Village health volunteers correctly and suitably used herbal plants. Village health volunteers used the product such as shampoo produced from herbal plants planted in their community. Village health volunteers used herbal plants planted in their house area or their community to treat illness.

5. Village health volunteers' problems, obstacles, recommendations, and opinion on herbal plant conservation and development

5.1 Village health volunteers' problems and obstacles of participation on herbal plant conservation and development

1. As village health volunteers did not know how to use herbal plants, they did not use and plant herbal plants.

2. Some village health volunteers did not have enough area to plant herbal plants.

3. People did not want to use herbal plants because they did not see value and importance.

4. Planting herbal plants in little quantity was not sufficient for use in producing herbal plant products and being used as food ingredient.

5. Some villages did not have the herbal plant conservation promotion group.

6. Some community did not have fund and budget for herbal plant conservation and development

## 5.2 Village health volunteers' recommendations on herbal plant development and conservation

1. Villages where there is no herbal plant conservation promotion group should establish the herbal plant conservation promotion group.

2. The training of herbal plant conservation and development for village health volunteers should be widely held so that these volunteers can have correct knowledge of benefits, value of herbal plants, precaution, and correct use and know village health volunteers' roles of participation in herbal plant conservation and development.

3. There should be an agency which continuously promotes and supports herbal plant conservation and development such as budget, finding herbal plant breeds.

4. Public relations should be continuously made in order to make people see importance of herbal plant conservation and development.

## 5.3 Village health volunteers' opinion on conservation and use of herbal plants and development of herbal plant products

1. When there is use and destruction of herbal plants, there should be replacement planting in the sufficient quantity for conservation and use in the future.

2. There should be dissemination of knowledge of planting, conservation, correct use, and development of herbal plants.

3. There should be encouragement of safe, standard, and acceptable development of herbal plant products

4. Every family should plant and conserve herbal plants for continuous use.

5. Children should be encouraged and advised to see value, be interested in herbal plants, and participate in herbal plant conservation and development.

### **Recommendations of the research results**

1. There should be establishment of the herbal plant conservation promotion group in the village in order to encourage village health volunteers and people to have roles of herbal plant conservation and development continuously and widely by coordinating with state agencies and other agencies.

2. Participation on herbal plant conservation and development for village health volunteers was in the moderate level. Village health volunteers should be instilled and created correct conscience to see importance or know value of herbal plants for more participation in herbal plant conservation and development through various media such as training/seminar, television, radio, journal, documents.

3. There should be provision of area of the community or villages for planting herbal plants such as health center, temple, and school. Village health volunteers and people should participate in conservation and use for continuously promoting herbal plant conservation.

4. Every family should be encouraged to plant herbal plants such as organizing a project of herbal gardens in the sample family in each community.

5. Village health volunteers and people should be encouraged to participate in the planning process or various projects of herbal plant conservation and development in order to make village health volunteers and people accept the project plan such as various projects in the Thai traditional medicine center, herbal plant products, the herbal plant planting project for sufficiently replacing the destroyed ones.

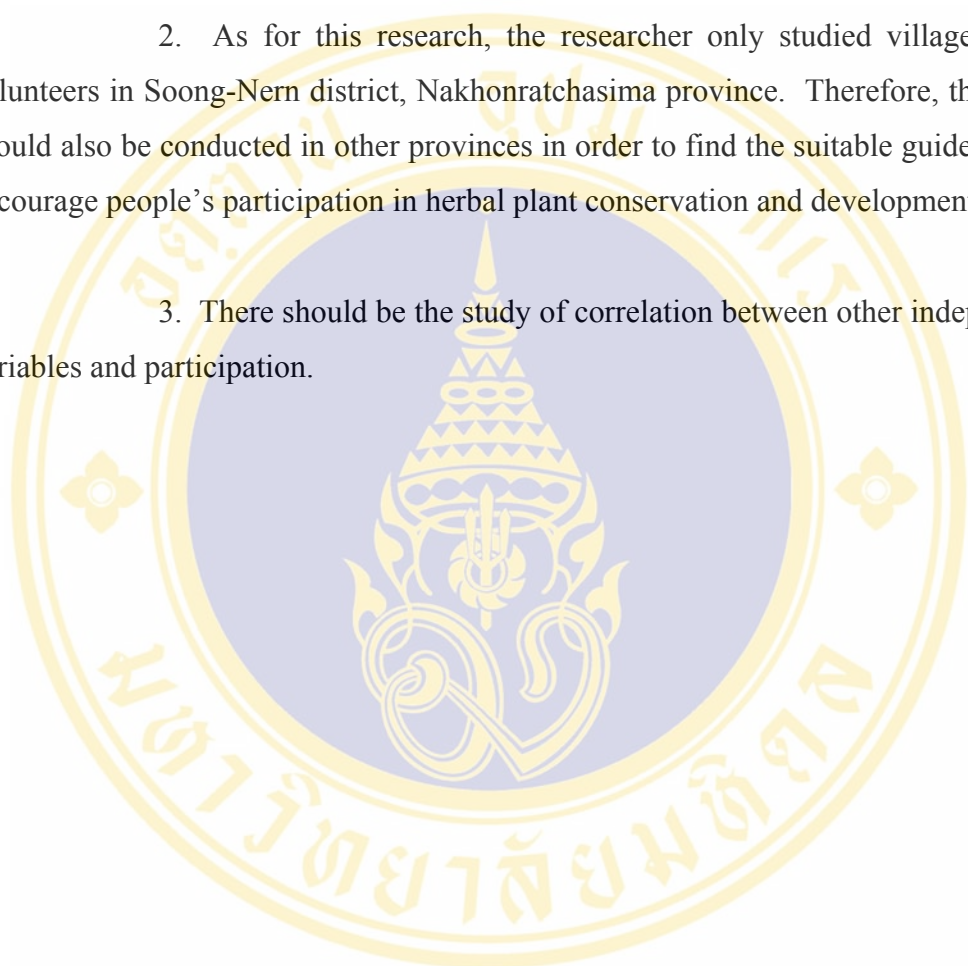
### **Recommendations for the next research**

1. There should be the study of participation on herbal plant conservation and development for other sample groups such as community health

officers working in the health centers and people for studying and encouraging participation on herbal plant conservation and development for every group of people.

2. As for this research, the researcher only studied village health volunteers in Soong-Nern district, Nakhonratchasima province. Therefore, the study should also be conducted in other provinces in order to find the suitable guidelines to encourage people's participation in herbal plant conservation and development.

3. There should be the study of correlation between other independent variables and participation.



## BIBLIOGRAPHY

### THAI

- คณะกรรมการการแพทย์แผนไทย โรงพยาบาลสูงเนิน จังหวัดนครราชสีมา. (2534). การพัฒนารูปแบบการผสมผสานการแพทย์แผนไทยเข้าสู่ระบบบริการสาธารณสุขปัจจุบัน ในโรงพยาบาลสูงเนิน จังหวัดนครราชสีมา. โรงพยาบาลสูงเนิน จังหวัดนครราชสีมา
- คณะกรรมการสภาวิจัยแห่งชาติ สาขาวิทยาศาสตร์เคมีและเภสัช มหาวิทยาลัยขอนแก่นและสมาคมสมุนไพรแห่งประเทศไทย. (2540). สมุนไพรไทย. รายงานการสัมมนาทางวิชาการ.
- คณะทำงานจัดทำแผนพัฒนางานสาธารณสุขมูลฐานในแผนพัฒนาการเศรษฐกิจและสังคมแห่งชาติ เอกสารประกอบการประชุม ฉบับที่ 9, วันที่ 1 กันยายน 2543.
- คณะอนุกรรมการประสานงานวิจัยและพัฒนาก่อนุรักษ์ทรัพยากรพันธุกรรมทางพืช. (2539). รายงานการสัมมนาเรื่องการฟื้นฟูพืชสมุนไพรเพื่อสังคมไทย. กรุงเทพมหานคร.
- นอ่าน วุฒิกรรมรักษา. (2526). ปัจจัยทางเศรษฐกิจและสังคมที่มีผลต่อการเข้ามามีส่วนร่วมของประชาชนในโครงการสร้างงานในชนบท : ศึกษาเฉพาะกรณีโครงการที่ได้รับรางวัลดีเด่น ตำบลคุ้มพยอม อำเภอบ้านโป่ง จังหวัดราชบุรี. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, บัณฑิตวิทยาลัย มหาวิทยาลัยธรรมศาสตร์.
- นัตราภรณ์ วิวัฒนานิช. (2537). ปัจจัยที่มีความสัมพันธ์ต่อการมีส่วนร่วมในการอนุรักษ์ทรัพยากรธรรมชาติ และสิ่งแวดล้อมของประชาชน หมู่บ้านปลา และหมู่บ้านพยุห อำเภอบ้านฉาง จังหวัดระยอง. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, สาขาวิทยาศาสตร์สิ่งแวดล้อม โครงการสหวิทยาการบัณฑิตศึกษา มหาวิทยาลัยเกษตรศาสตร์.
- ชัยโรจน์ ธนสันติ. (2535). การมีส่วนร่วมของกรมการสภาตำบลในการอนุรักษ์ทรัพยากรธรรมชาติ : ศึกษากรณีจังหวัดอุบลราชธานี. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- ทวีทอง หงษ์วิวัฒน์, (บรรณาธิการ). (2527). การมีส่วนร่วมของประชาชนในการพัฒนา นครปฐม : ศูนย์นโยบายสาธารณสุข มหาวิทยาลัยมหิดล.

- เชียรชัย บุรพชนก. (2538). การมีส่วนร่วมของชุมชนในกิจกรรมสุขภาพของหมู่บ้านพึ่งตนเองทางสาธารณสุขมูลฐาน จังหวัดระยอง. วิทยานิพนธ์มหาบัณฑิต คณะวิทยาศาสตร์ มหาวิทยาลัยมหิดล .
- บุญธรรม กิจปรีดาบริสุทธิ์. (2531). เทคนิคการสร้างเครื่องมือรวบรวมข้อมูลสำหรับการวิจัย . กรุงเทพมหานคร : โรงพิมพ์ศรีอนันต์.
- ปรัชญา เวสารัชช์. (2528). การมีส่วนร่วมของประชาชนในกิจกรรมเพื่อพัฒนาชนบท. สถาบันไทยคดีศึกษา มหาวิทยาลัยธรรมศาสตร์.
- พรทิพย์ อังกูดี. (2539). การมีส่วนร่วมของสตรีผู้นำในการส่งเสริมและรักษาคุณภาพสิ่งแวดล้อมในจังหวัดราชบุรี. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, สาขาวิทยาศาสตร์สิ่งแวดล้อม โครงการสหวิทยาการระดับบัณฑิตศึกษา มหาวิทยาลัยเกษตรศาสตร์.
- พวงรัตน์ ทวีรัตน์. (2543). วิธีการวิจัยทางพฤติกรรมศาสตร์และสังคมศาสตร์. (พิมพ์ครั้งที่ 8). สำนักงานทดสอบทางการศึกษาและจิตวิทยา มหาวิทยาลัยศรีนครินทรวิโรฒ ประสานมิตร.
- \_\_\_\_\_ . (2538). วิธีการวิจัยทางพฤติกรรมศาสตร์และสังคมศาสตร์. (พิมพ์ครั้งที่ 6). กรุงเทพมหานคร : มหาวิทยาลัยศรีนครินทรวิโรฒ ประสานมิตร.
- พัทธา สายหู. (2516). ความเข้าใจเกี่ยวกับกลไกของสังคม. กรุงเทพมหานคร : โรงพิมพ์พิมพ์เนศ.
- พิเชษฐ์ ศรีเมฆ. (2528). ความรู้ การรับรู้ และพฤติกรรมอนามัยที่เกี่ยวกับโรคพยาธิใบไม้ในตัวของนักเรียนประถมศึกษาในจังหวัดเพชรบูรณ์. วิทยานิพนธ์ปริญญาศึกษาศาสตรมหาบัณฑิต, สาขาสังแวดล้อมศึกษา บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- ไพรัตน์ เตชะรินทร์. (2527). การมีส่วนร่วมของประชาชนในการพัฒนา. กรุงเทพมหานคร : ศักดิ์โสภารพิมพ์.
- ภัทรภาพร ตั้งสุขฤทัย. (2542). พฤติกรรมสุขภาพเกี่ยวกับการใช้สมุนไพรในงานสาธารณสุขมูลฐานของประชาชน ในจังหวัดนนทบุรี. วิทยานิพนธ์ปริญญาศึกษาศาสตรมหาบัณฑิต, สาขาวิชาสุขศึกษา บัณฑิตวิทยาลัย มหาวิทยาลัยศรีนครินทรวิโรฒ.
- มงคล วงศ์ตันหิ้น. (2532). การศึกษาความรู้ และทัศนคติของหัวหน้าสถานีอนามัยที่มีต่อโครงการสมุนไพรในงานสาธารณสุขมูลฐาน ในจังหวัดพัทลุง. ภาคนิพนธ์ปริญญาวิทยาศาสตรบัณฑิต, คณะสาธารณสุขศาสตร์ มหาวิทยาลัยมหิดล.
- มูลนิธิสถาบันวิจัยเพื่อการพัฒนาประเทศไทย. (2538). การสร้างการมีส่วนร่วมของประชาชนในการพัฒนาชุมชน. รายงานประกอบการประชุมวิชาการประจำปี.

- ยศ สันตสมบัติ. (2542). ความหลากหลายทางชีวภาพและภูมิปัญญาท้องถิ่นเพื่อการพัฒนาอย่างยั่งยืน. คณะสังคมศาสตร์ มหาวิทยาลัยเชียงใหม่.
- ยุวัฒน์ วุฒิเมธี. (2526). การประเมินกลไกการบริหารเพื่อการมีส่วนร่วมของสตรี. เอกสารประกอบการสัมมนาเรื่องสตรีกับการพัฒนาและผลที่มีต่อการเปลี่ยนแปลงประชากรในประเทศ.
- รังสรรค์ ชนะพรพันธุ์. (2518). กลยุทธ์ในการแก้ปัญหาความยากจนในประเทศไทย. กรุงเทพมหานคร : กรุงเทพมหานครการพิมพ์.
- โรงพยาบาลสูงเนิน จังหวัดนครราชสีมา. (2542). ที่ระลึกพิธีเปิดอาคารสมเด็จพระเจ้า. สำนักงานปลัดกระทรวงสาธารณสุข กระทรวงสาธารณสุข.
- วัลย์ภรณ์ ดาวสุวรรณ. (2536). การมีส่วนร่วมของประชาชนในท้องถิ่นต่อการอนุรักษ์สิ่งแวดล้อมบึงขุนทะเล. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- วันดี กฤษณพันธ์. (2538). สมุนไพรพัดประโยชน์. ภาควิชาเภสัชวินิจฉัย คณะเภสัชศาสตร์ มหาวิทยาลัยมหิดล.
- \_\_\_\_\_. (2536). ยาและผลิตภัณฑ์จากธรรมชาติ เล่ม 2. ภาควิชาเภสัชวินิจฉัย คณะเภสัชศาสตร์ มหาวิทยาลัยมหิดล.
- วิมลรัตน์ ศรีสิงห์. (2538). การมีส่วนร่วมอนุรักษ์ทรัพยากรธรรมชาติของกลุ่มสตรีกาญจนบุรี. วิทยานิพนธ์ปริญญาศึกษาศาสตรมหาบัณฑิต, สาขาสังแวดล้อมศึกษา บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- วินัย วีระพัฒนานนท์ และบานชื่น สีพันพ้อง. (2539). สิ่งแวดล้อมศึกษา การศึกษาเพื่อการพัฒนาที่ยั่งยืน. กรุงเทพมหานคร : โรงพิมพ์จุฬาลงกรณ์มหาวิทยาลัย.
- วิไลพร สมบูรณ์ชัย. (2534). การมีส่วนร่วมของผู้นำอาสาพัฒนาชุมชนในการอนุรักษ์ ทรัพยากรธรรมชาติจังหวัดลำปาง. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- ศราวณีย์ วิณะคุปต์. (2533). บทบาทของข้าราชการตำรวจตระเวนชายแดนในการอนุรักษ์ทรัพยากรป่าไม้. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- คันสนะ ดันติชาติ. (2531). การมีส่วนร่วมของกรรมการสภาตำบลในโครงการพัฒนาแหล่งน้ำจังหวัดกาฬสินธุ์. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.

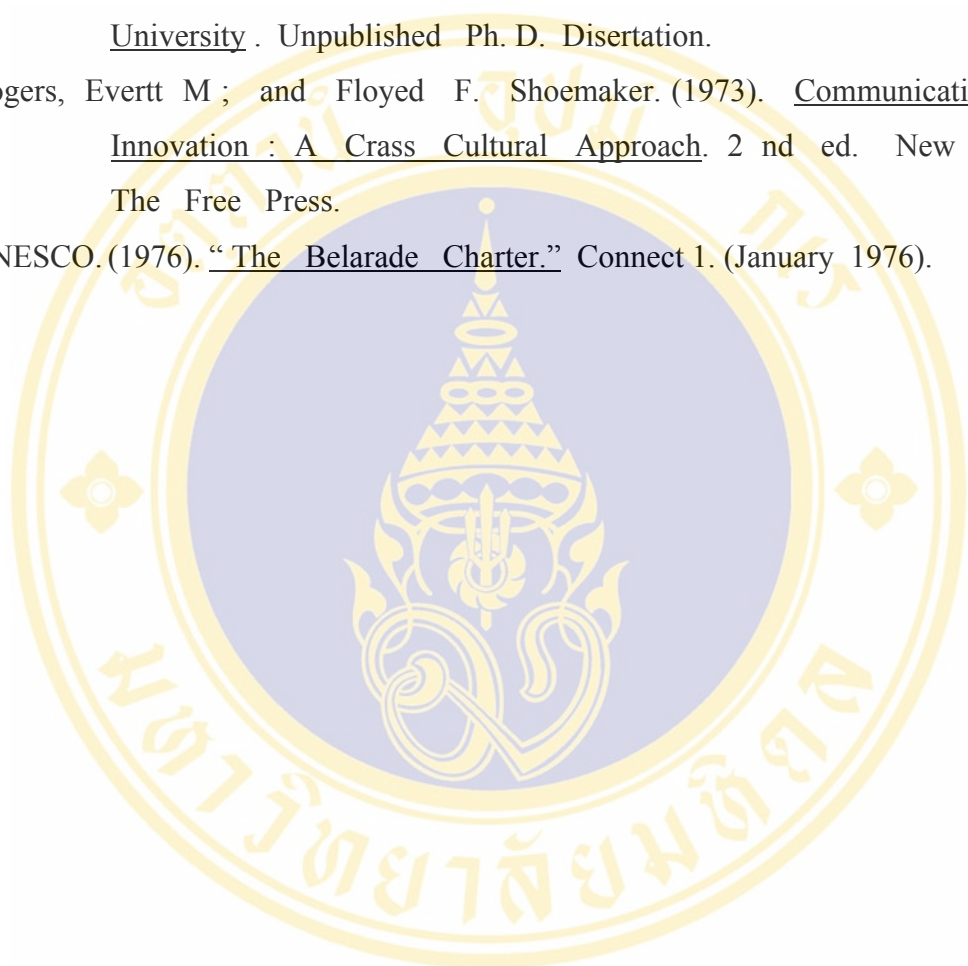
- ศิริวรรณ เสรีรัตน์ และคณะ. (2537). ศัพท์การบริหาร. กรุงเทพมหานคร : พัฒนาศึกษา.
- สมใจ เข้มเจริญ. (2534). การมีส่วนร่วมของประชาชนในการอนุรักษ์ทรัพยากรป่าไม้ : กรณีศึกษาดำบลสะเอียบ อำเภอสอง จังหวัดแพร่. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- \_\_\_\_\_. (2531). การมีส่วนร่วมของประชาชนในการอนุรักษ์ทรัพยากรป่าไม้ : ศึกษากรณีตำบลสะเอียบ อำเภอสอง จังหวัดแพร่. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- สถาพร อธิพิงษ์. (2536). การมีส่วนร่วมของคณะกรรมการสภาตำบลในการอนุรักษ์ป่าชายเลน: ศึกษาเฉพาะกรณีอำเภอท่าใหม่ และกิ่งอำเภอนายอาม จังหวัดจันทบุรี. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, สาขาสังแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- สถาบันการแพทย์แผนไทย กระทรวงสาธารณสุข. (2540). การแพทย์แผนไทยสายใยแห่งชีวิต และวัฒนธรรม. กรุงเทพมหานคร : โรงพิมพ์องค์การสงเคราะห์ทหารผ่านศึก.
- สัจชัย สุตพันธ์วิหาร. (2539). การมีส่วนร่วมของประชาชนต่อปัญหามลพิษทางน้ำจากชุมชน : ศึกษากรณีเทศบาลเมืองภูเก็ต. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, สาขาวิชาเทคโนโลยีการบริหารสิ่งแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- สุพจน์ เพชรกรรพุม. (2532). ความรู้และทัศนคติของปลัดอำเภอที่มีต่อปัญหาสิ่งแวดล้อมในชนบท. วิทยานิพนธ์ปริญญาสังคมศาสตรมหาบัณฑิต, บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- สุวรรณี คงทอง. (2536). การมีส่วนร่วมของประชาชนในการอนุรักษ์ป่าชายเลนชุมชน ในท้องที่อำเภอสิเกา จังหวัดตรัง. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, สาขาวิทยาศาสตร์สิ่งแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยเกษตรศาสตร์.
- สำนักงานคณะกรรมการการสาธารณสุขมูลฐาน. (2543). 20 ปี ของเส้นทางสู่การมีสุขภาพดีถ้วนหน้าของประชาชน. กระทรวงสาธารณสุข.
- \_\_\_\_\_. (2540). ยาสมุนไพรสำหรับงานสาธารณสุขมูลฐาน. กรุงเทพมหานคร : โรงพิมพ์องค์การสงเคราะห์ทหารผ่านศึก.
- \_\_\_\_\_. (2535). คู่มือการดำเนินงานสาธารณสุขมูลฐานชุมชนสำหรับอาสาสมัครสาธารณสุข. กรุงเทพมหานคร : โรงพิมพ์องค์การสงเคราะห์ทหารผ่านศึก.
- สำนักงานคณะกรรมการวิจัยแห่งชาติ. (2545-2549). นโยบายและแนวทางการวิจัยของชาติ ฉบับที่ 6. กรุงเทพมหานคร.

- หวานใจ ชาวพัฒนวรรณ. (2543). พฤติกรรมการณ์ดูแลสภาพตนเองของอาสาสมัครสาธารณสุขประจำหมู่บ้าน ในจังหวัดนครปฐม. วิทยานิพนธ์ปริญญาศึกษาศาสตรมหาบัณฑิต, สาขาวิชาประชากรศึกษา บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- อดุลย์ วุฒิจูรีพันธ์. (2544). การศึกษาความสัมพันธ์ของหมอสุมไพโรกับความหลากหลายทางชีวภาพด้านพืชสมุนไพร ในจังหวัดกาญจนบุรี. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, สาขาวิชาเทคโนโลยีการวางแผนสิ่งแวดล้อมเพื่อพัฒนาชนบท บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- อุดม อัมพรพันธ์. (2539). การสร้างและวัดผลสัมฤทธิ์หลักสูตรสิ่งแวดล้อมศึกษา ด้านการอนุรักษ์ทรัพยากรธรรมชาติและสิ่งแวดล้อมโดยใช้แบบเรียนด้วยตนเอง กรณีศึกษา : อาสาสมัครสาธารณสุข จังหวัดพัทลุง. วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต, สาขาวิชาเทคโนโลยีการบริหารสิ่งแวดล้อม บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล.
- เอกราช บุญอาจ. (2543). การใช้สมุนไพรและการแพทย์แผนไทยของอาสาสมัครสาธารณสุขประจำหมู่บ้าน. วิทยานิพนธ์ปริญญาศิลปศาสตรมหาบัณฑิต, สาขาพัฒนาสังคม บัณฑิตวิทยาลัย มหาวิทยาลัยขอนแก่น.

## ENGLISH

- Alvin, Bertrand. (1958). Rural Sociology. New Year : Mc Graw- Hill Book Co.,
- Cary, Lee J. (1976). Community Development as a Process. University of Missouri Columbia.
- Cohen John M and Uphoff Norman T. (1980). "Participation's Place in Rural Development : Seeking clarity Through Specificity." World Development 8.
- Erwin, William. (1976). Participation Management : Concept Theory and Implementation. Atlanta Ga : Geogia State University.
- International Labour Office. (1971). Participation by Employers' and Workers' Organization Ineconomic and Social Planning. Geneva: International Labour office.
- Maslow, A.H. (1970). Motivation and Personality, New Year : Harper and Row.

- Pearse, Andrew and Stiefel, Mathias. (1979). "Inquiry in Participation a Research Approach" In UNRISD Participation Program. Geneva.
- Reeder, William W. (1974). Some Aspects of the Informal Social Participation of Farm Families in New York State Cornell University. Unpublished Ph. D. Disertation.
- Rogers, Evertt M ; and Floyed F. Shoemaker. (1973). Communication and Innovation : A Crass Cultural Approach. 2 nd ed. New York : The Free Press.
- UNESCO. (1976). "The Belarade Charter." Connect 1. (January 1976).





No. □□□  
**Questionnaire**

**Participation on Herbal Plant Conservation and Development  
For Village Health Volunteers in Soong-Nern District,  
Nakhonratchasima Province**

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**Clarification**

- # This research is done by a student of the Faculty of Social Science and Humanities, Mahidol University.
- # As for your information, I will not mention your name but will present the research results in general.
- # I would like to thank you very much for answering this questionnaire.

This questionnaire totally consists of 14 pages and 5 sections as follows;

- Section 1      Questions on respondents' general information
- Section 2      Questions on knowledge of herbal plant conservation  
and development
- Section 3      Questions on attitudes toward herbal plant conservation  
and development
- Section 4      Questions on participation on herbal plant conservation  
and development for village health volunteers
- Section 5      Problems, obstacles, and recommendations on herbal  
plant conservation and development

**## Please completely answer the questions by putting a mark ✓ in ( ) and fill in messages in ..... to be consistent with the information you answer.**

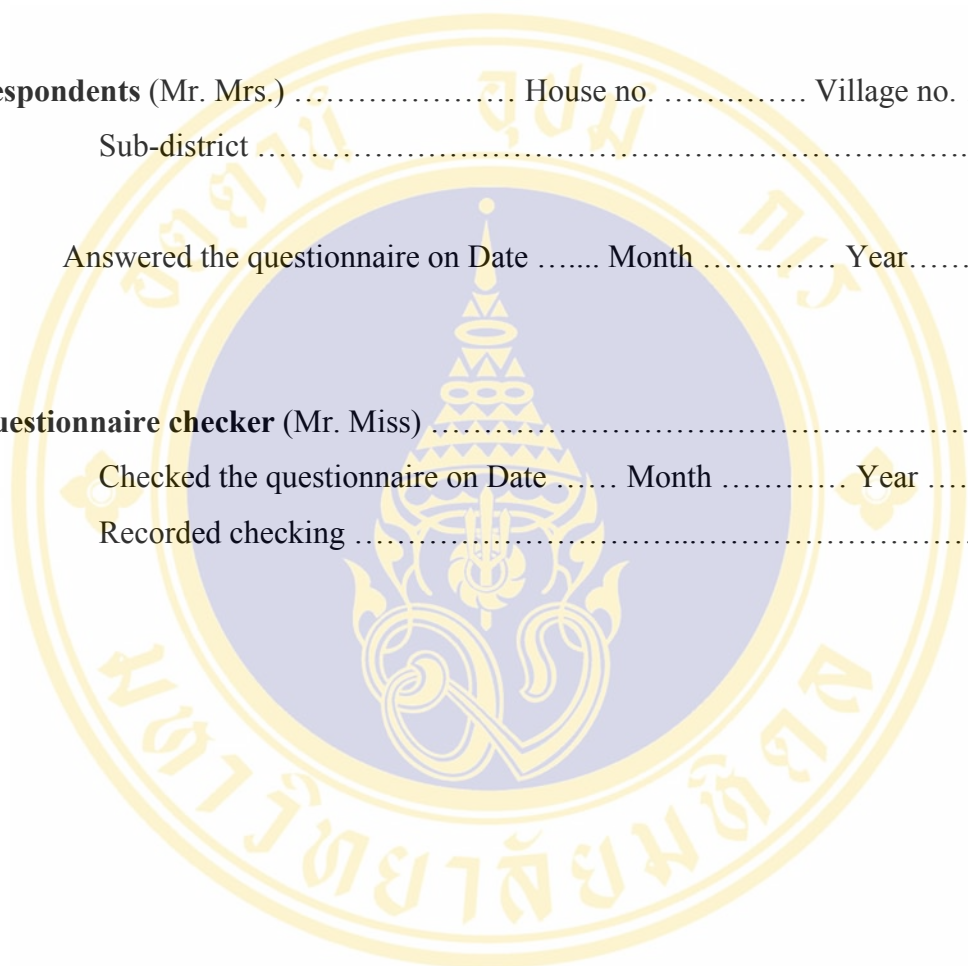
**Respondents** (Mr. Mrs.) ..... House no. .... Village no. ....  
Sub-district .....

Answered the questionnaire on Date ..... Month ..... Year.....

**Questionnaire checker** (Mr. Miss) .....

Checked the questionnaire on Date ..... Month ..... Year .....

Recorded checking .....



## Section 1 Respondent's general information

### Part 1 Personal information

#### 1. Sex

- Male  Female

#### 2. Age .....

#### 3. Your highest education

- Uneducated/below the primary level  
 Primary level  
 Lower secondary education  
 Higher secondary education  
 Vocational education  
 High vocational education  
 Diploma  
 Bachelor degree  
 Higher than bachelor degree  
 Other, please specify .....

#### 4. Your present occupation

- Official/ state employee  
 Private company employee  
 Factory employee  
 Personal business  
 Rice farming/gardening/orchard  
 Trading  
 Housewife  
 Unemployed  
 Pension official farming  
 Other, please specify .....

5. You have lived in this district for ..... years.

6. You have been a village health volunteer for ..... years.

**7. Marital status**

- Single
- Married
- Divorced
- Separated
- Widowed
- Other, please specify .....

**Part 2 Social and economic information**

1. Your monthly average income after deducting expenditure..... baht

**2. Land occupation ownership**

- You own the land with the area of ..... Rai(s)..... Square Wa
- You rent other people's land with the area of.....Rai(s) ....Square Wa and annually pay the rent at the amount of ..... baht.

**3. How do you use your land?**

- For living
- For living and doing agriculture for trading – excluding people who do agriculture for consumption in the family
- For living and trading (please specify).....
- Other, please specify .....

**4. Whether you receive information on herbal plant conservation and development from the following information sources;**

<b>Information sources</b>	<b>Frequency of receiving the information from the highest to the lowest 1 2 3 4 5 6.....12 If never, please write .....</b>
1. Television	
2. Radio	
3. Newspaper/ various printed materials	
4. Exhibitions/ various shows	
5. Health personnel	
6. Friends	
7. Teacher	
8. Monk	
9. Local wisdom	
10. Local expert	
11. Community leader	
12. Other, please specify ..... .....	

**5. Whether you inform the following people about the above information.**

<b>Information sources</b>	<b>Never</b>	<b>Used to</b>		
		<b>Seldom, please specify (times/month/year)</b>	<b>Often (1-6 times/week)</b>	<b>Reasons</b>
1. People in the family				
2. Neighbor				
3. Other, please specify ..... .....				

**6. In your opinion, how can related agencies increasingly disseminate knowledge of herbal plant conservation and development?**

- Newspaper
- Journal/ magazine
- Television
- Radio
- Training
- Other, please specify .....

**7. What knowledge of herbal plant conservation and development do you want more?**

- Benefits, value of herbal plants, precaution, and correct use
- Village health volunteers' roles of participation in herbal plant conservation and development
- Herbal plant conservation and development management guidelines
- Herbal plant conservation and development problems and problem-solving guidelines
- Other, please specify .....

**8. What herbal plant conservation and development promotion groups are established in your sub-district?**

- Group establishment
  - No group establishment
- Group name (1) ..... for .....
- (2) ..... for .....
- (3) ..... for .....

**9. Which group in Item 8 are you a member?**

- Not being a member
- Being a member of .....

Sub-district ..... District ..... For ..... years.

Position and duties in the herbal plant conservation and development promotion group .....

.....

**10. Did you use to use herbal plants for treatment in the past 2 years?**

- Never
- Used to use ..... for treatment of .....
- ..... for treatment of .....

Other, please specify .....

Treatment results by using herbs

- Completely get well
- Be slightly better
- Be considerably better
- Not be better
- Other, please specify.....

**11. Why do you use herbs for treatment? (You can answer more than one item.)**

- Promotion, dissemination, training
- There is no modern polyclinic near your house
- You trust and like to use.
- Herbal doctors are friendly.
- Herbs are cheap.
- You do not like medical officers' service methods.
- Other, please specify .....

## Section 2 Knowledge of herbal plant conservation and development

**Clarification:** Please write  around a, b, c, or d which you think that it is a correct answer.

### 1. What does “Herbs” mean?

- a. Things which are derived from nature such as plant, animal, and minerals and are completely transformed.
- b. Things which are derived from nature such as plant, animal, and minerals and have yet to be transformed.
- c. Things which are derived from nature such as plant and have yet to be transformed.
- d. Things which are derived from nature such as plant and are completely transformed.

### 2. Which item is the benefit of herbal plants?

- a. Herbal plants can be used to treat disease, be used as food, and be cosmetic components.
- b. Herbal plants can be used to treat disease only. They cannot be used as food.
- c. Herbal plants can be used as cosmetic components only. They cannot be used to treat disease.
- d. Herbal plants can be used to treat disease only. They cannot be used as cosmetic components.

### 3. Which item is the benefit of lemongrass?

- a. Diuretic
- b. Relieve stomach disorder.
- c. Strengthen elements.
- d. Every item is correct.

**4. Which item is the benefit of “Thong Phan Chang”?**

- a. Fresh leaves or fresh and dry roots are used to treat ringworm.
- b. Dry roots are used to treat muscle pain.
- c. Ground leaves are used to relieve cough.
- d. Every item is correct.

**5. Which item is the benefit of turmeric?**

- a. To prevent stomach wound.
- b. Treat skin disease and rash
- c. To treat ringworm.
- d. Every item is correct.

**6. Which part of a clove is used to treat bloat?**

- a. Fresh root
- b. Dry bud
- c. Old leaves
- d. Stem

**7. Which part of cassumunar is used to suppress muscle pain?**

- a. Flower
- b. Leaf
- c. Rhizome
- d. Pollen

**8. Which herb is used to treat bloat?**

- a. To pound rhizome and root of boesenbergia and boil for use as drink.
- b. To pound ring worm bush and rub the stomach with the pounded ring worm bush.
- c. To pound 2-3 tamarinds and eat 3-4 times a day.
- d. To eat 3-4 ripe bitter cucumbers.

**9. Which herb is used to relieve cough and phlegm**

- a. Drink guava juice 3 times a day.
- b. Drink aloe juice.
- c. Eat tamarind with salt or frequently sip tamarind juice.
- d. Frequently sip coconut juice.

**10. Which plant helps prevent and relieve cold fever?**

- a. Turmeric
- b. Kariyat
- c. Tea
- d. Clove

**11. Which plant is used to help treat diarrhea?**

- a. Eat 3-4 ripe baby cucumber.
- b. Eat 4-5 pounded garlic cloves 4-5 times a day.
- c. Eat ½ - 1 nearly ripe banana per time.
- d. Drink citronella grass juice.

**12. Which item is the allergy caused by using herbs?**

- a. Rash on the skin, jaundice
- b. Food aversion, vomit, nausea, palpitation
- c. Ear tingling, blurred vision, numb tongue and skin
- d. Every item is correct.

**13. Which item is a recommendation on herbal use?**

- a. Correctly use the herb.
- b. Use the correct part and methods.
- c. Correctly use the herb to treat disease.
- d. Every item is correct.

**14. Which item is correct?**

- a. The same kind of herbs will be identically called in every province.
- b. Parts of every kind of herbs such as root, leaf, fruit, flower will have equal effectiveness.
- c. Use of herbs in little quantity may not be effective but use of herbs in excessive quantity may be dangerous to the body.
- d. Fresh herbs must be used.

**15. Which item is correct?**

- a. Herbal plants should be stored in the humid condition because fungus does not affect medicine effectiveness.
- b. The medicine storing place must be dry, cold, and well ventilated.
- c. Worms, rats, insects do not cause change in herbal plant qualification.
- d. Every item is correct.

**16. Which herb is presently promoted by the basic health service?**

- a. Plant
- b. Animal
- c. Minerals
- d. No item is correct.

**17. Which item of pest elimination and prevention is correct?**

- a. No herbal plant can be used to eliminate pests.
- b. Some herbal plants can be used to eliminate pests and are safer than chemicals such as papaya, lemongrass.
- c. Herbal plants should not be used to eliminate pests because it is more dangerous than chemicals.
- d. It is not necessary to prevent danger of using chemicals to eliminate pests.

**18. Which item of attaching value of herbal plants is correct?**

- a. Herbal plants should be picked in the suitable day, direction, and season for the highest benefits of medicine.
- b. Select herbal plants which are fully grown and have high value of medicine.
- c. To prevent herbal plants from dying, people should remove some part of herbal plant bark
- d. Every item is correct.

**19. Which item may be a cause of reducing the quantity of herbal plants?**

- a. Planting herbal garden.
- b. There is no planting of herbal plants as a replacement.
- c. Storing herbal plant breeds and planting.
- d. Establishing the local herb, vegetable, plant conservation group.

**20. Which item is the herbal plant conservation guidelines?**

- a. Encourage people to plant herbal plants for use or distribution.
- b. Create people's herbal plant conservation network.
- c. Store herbal plant breed for planting.
- d. Every item is correct.

### Section 3 Attitudes toward herbal plant conservation and development

Please mark ✓ in the blank which is most consistent with your opinion.

Messages	Considerably agree	Agree	Unsure	Disagree	Considerably disagree
1. Herbal plants are very necessary for people in the present time.					
2. To encourage people to take care of their health and rely on themselves by using herbal plants is very useful to people.					
3. Herbal plants should also be used in the modern medicine services.					
4. There should be herbal gardens in the villages.					
5. People who recommend other people to use and plant herbal plants are old-fashioned people.					
6. Every family should plant necessary herbs for use.					
7. Herbal plants should not be produced as finished medicine cosmetics due to unsuitability in the present time.					
8. Treatment by using herbs helps save expenses in the family.					
9. As there are a lot of herbal plants in the forest, it is not necessary to plant herbal plants in the house area.					

Messages	Considerably agree	Agree	Unsure	Disagree	Considerably disagree
10. Implementation on the basic health which encourages correct use and planting herbal plants is appropriate.					
11. The projects which encourage planting and use of herbs should be continuously done.					
12. Herbal plants are very necessary to the public health and medical field.					
13. If you have sufficient knowledge of herbal plants, you are ready to encourage, recommend use and planting of herbal plants.					
14. People should not buy cosmetics such as soap, skin cream which have components of herbal plants.					
15. Caring health by herbal compression which helps better the body does not result from herbal plants but results from accidental event.					
16. Production of health herbal products such as shampoo, soap helps reduce expenses and is effective.					
17. Planting herbal plants should be encouraged and developed.					

Messages	Considerably agree	Agree	Unsure	Disagree	Considerably disagree
18. To encourage people to use, plant, and develop herbal plant products saves the country budget.					
19. Officers and people in Nakhonratchasima province are encouraged to plant and use herbs.					
20. Herbal gardens should be planted in every community basic health center.					

### Section 4 Participation on herbal plant conservation and development for village health volunteers

**Clarification:** Please mark ✓ in the blank (Used to) or (Never) according to reality and answer the questions.

Contents	Used to				If yes, please answer the questions.
	Never	Less than once a year	Once a year	Once a month	
(1) = Participation in decision making (2) = Participation in implementation (3) = Participation in benefits (4) = Participation in evaluation					
<b>Input</b> 1. You used to attend a meeting of promoting knowledge of herbal plants to village health volunteers (1).					From which agencies?  What is the meeting topic?
2. You produce herbal plant products for use in the work of the Thai traditional medicine center such as herbal compresses, herbal sauna sets (2).					What products?  What herbs?

Contents	Never	Used to				If yes, please answer the questions.
		Less than once a year	Once a year	Once a month	Once a week or more	
(1) = Participation in decision making (2) = Participation in implementation (3) = Participation in benefits (4) = Participation in evaluation						
3. You participate in the herbal plant conservation work group such as the cassumunar and lemongrass planting promotion group.						What herbs are promoted?
4. You plant herbal plants (2).						What herbs?
5. You used to pay for production of herbal plant products in the community (2)						What products? What projects?
6. You donate money to campaign for herbal plant planting (2).						What herbs?
7. You used to product herbal plant products for use or distribution such as shampoo, soap (3).						What products?  What herbs?

Contents	Never	Used to				If yes, please answer the questions.
		Less than once a year	Once a year	Once a month	Once a week or more	
(1) = Participation in decision making (2) = Participation in implementation (3) = Participation in benefits (4) = Participation in evaluation						
8. You buy herbal plant products from the producers for distribution (3).						What products? What herbs?
9. You used to propose opinion on development of herbal plant products and herbal plant planting (4).						What issue?
<b>Process</b> 10. Herbal plants are planted in your house area (2).						What herbs? Planting for
11. Herbal gardens are planted in the community basic health center area (2)						
12. You disseminate information and knowledge of herbal plants (2).						

Contents	Never	Used to				If yes, please answer the questions.
		Less than once a year	Once a year	Once a month	Once a week or more	
(1) = Participation in decision making (2) = Participation in implementation (3) = Participation in benefits (4) = Participation in evaluation						
13. You recommend herbal plant products development and production methods (2).						What products?
14. You persuade other people to help preserve herbal plants (2).						
15. You recommend people or close people to plant herbal plants (2).						What herbs?
16. You coordinate between people in the village and officers to promote correct use and planting of herbal plants (2).						
<b>Product</b> 17. You pick herbs in the suitable quantity for use (2).						

Contents	Never	Used to				If yes, please answer the questions.
		Less than once a year	Once a year	Once a month	Once a week or more	
(1) = Participation in decision making (2) = Participation in implementation (3) = Participation in benefits (4) = Participation in evaluation						
18. You correctly and suitably use herbal plants (2).						
19. You use the products such produced from herbal plants planted in your community (3).						What products? What herbs? Results of using
20. You use herbal plants planted in your house area or community for treatment (3)						What herbs? What disease? Treatment results
21. You have more income through production of herbal plant products (3).						What products? Income
22. You and the community jointly make the herbal promotion project (4).						What projects?







## Questionnaire

This qualitative questionnaire totally consists of 8 items 4 pages for respondents to write answers.

### Clarification

- # This study is done by a student of the Faculty of Social Science and Humanities, Mahidol University.
- # As for your information, I will not mention your name but will present the research results in overview.
- # I would like to thank you very much for answering this questionnaire.

**Please completely answer the questions by filling in messages in ..... according to the information you answer.**

**Respondent (Mr. Mrs.) ..... House no. .... Village no.....**  
**Sub-district .....**

Answered the questionnaire on Date ..... Month ..... Year .....

**Respondent checker (Mr. Miss) .....**

Checked the questionnaire on Date .... Month ..... Year .....

Recorded checking .....



**3. Background of the Thai traditional medicine center**

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Who founded the Thai traditional medicine center? .....

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.....  
.....

Why was the Thai traditional medicine center founded? .....

.....  
.....

When was the Thai traditional medicine center founded?

.....  
.....  
.....

**4. How do village health volunteers manage herbal plants in your sub-district?**

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Planting .....

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Production .....

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.....

Dissemination of knowledge .....

.....  
.....





**The correct answers of the question in section 2 knowledge of herbal plant conservation and development**

- 1 b
- 2 a
- 3 d
- 4 a
- 5 d
- 6 b
- 7 c
- 8 a
- 9 c
- 10 b
- 11 c
- 12 d
- 13 d
- 14 c
- 15 b
- 16 a
- 17 b
- 18 d
- 19 b
- 20 d



## รายชื่อพืชสมุนไพรที่อาสาสมัครสาธารณสุขประจำหมู่บ้านปลูกไว้



ว่านหางจระเข้	ชะเอมเทศ
ตะไคร้	ว่านชักมดลูก
บอระเพ็ด	มะกรูด
ขมิ้นชัน	ไพล
มะกรูด	หญ้าแห้วหมู
ฟ้าทะลายโจร	แก่นฝาง
กระเพรา	ต้นมหากาฬ
เหงือกปลาหมอ	สะเดา
ทับทิม	มะระจีนก
เสลดพังพอน	ลูกใต้ใบ
ชุมเห็ดเทศ	ทองพันชั่ง
ดอกคำฝอย	มะแว้ง
ตำลึง	จิง
สมอไทย	เสลดพังพอน
เพชรสังฆาต	



## BIOGRAPHY

<b>NAME</b>	Miss Sureeporn Neadgratoke
<b>DATE OF BIRTH</b>	5 February 1975
<b>PLACE OF BIRTH</b>	Nakhonratchasima, Thailand
<b>INSTITUTES ATTENDED</b>	Burapha University, 1997 Bachelor of Science (Health Education)  Mahidol University, 2007 Master of Education (Environmental Education)
<b>POSITION-OFFICE</b>	Officer Yanhee General Hospital, 1998–2001 Apex Health Care Company, 1998
<b>HOME ADDRESS</b>	102 Moo 9 Tumbol Lungkhao Amphur Nongbunmag, Nakhonratchasima, Thailand