

COMPARISON STUDY OF METHODS OF TRAINING THAI YOUNG FARMERS  
IN POULTRY RAISING

by

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B. S., Kansas State University, 1978

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A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

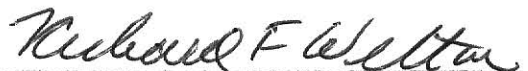
MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1981

Approved by:

  
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## ACKNOWLEDGMENTS

This study covered a long period of time and required a great deal of effort from many people. Assistance was provided in designing the study, in writing, translating, and printing needed materials, in carrying out the experiment, and finally in evaluating and writing up the results. In Thailand, many Peace Corps and youth development volunteers as well as Thai extension and university personnel generously helped with the study.

Special thanks goes to Dr. R. William Seiders, III, in-country director of the National 4-H Council Thailand Project, for his encouragement and assistance while conducting the study in Thailand. Special thanks also goes to Dr. Richard F. Welton, Associate Professor of Adult and Occupational Education and the researcher's major professor, for his patience, encouragement, and assistance with the writing of this thesis.

## CHAPTER I

### INTRODUCTION

In the United States, over half a million youth between the ages of seven and 19 are involved in the 4-H organization. The purpose of the 4-H program is commonly explained as providing experiences for participants which assist them in their personal development.<sup>1</sup> Developing personally implies changing from an existing state to a more desirable state. Change that is not forced (against one's will) or induced by artificial means (for example, by drugs) represents a type of change typically defined as learning.<sup>2</sup> Burton describes learning as "a change in the individual, due to the interaction of that individual, and his environment, which fills a need and makes him more capable of dealing adequately with his environment."<sup>3</sup>

A number of ways have been devised to influence the potential learner to engage in activities where learning might be possible. "Such purposeful activities have come to be characterized as learning experiences."<sup>4</sup>

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<sup>1</sup>G. L. Carter, Harry P. Zimmerman, and JoAnn K. Gruber, Adequacy of 4-H Literature as Instructional Material (Published Study, University of Wisconsin, Madison, October 1977), p. 1.

<sup>2</sup>Ibid., p. 1.

<sup>3</sup>William H. Burton, "Basic Principles in a Good Teaching-Learning Situation," Readings in Human Learning, ed. Crow and Crow (New York: David McKay Co., Inc., 1963), p. 7.

<sup>4</sup>Carter, Zimmerman, and Gruber, p. 1.

The United States 4-H program uses project work (actual hands-on experiences) as the dominant type of learning experience. Printed media such as project books and leader/agent guides and training programs have been developed as ways to influence the potential learner to engage in the learning experience.

Both time and money are spent on the development of these printed materials and training programs. Carter, Zimmerman, and Gruber indicated a national search was made to determine what had been done in the way of examining 4-H literature and two pertinent conclusions emerged:

1. Very little had been done anywhere that provided any degree of substantive insight into the adequacy of 4-H literature.
2. There is widespread interest in the question of the adequacy/ usefulness of 4-H literature.<sup>5</sup>

These conclusions are important not only to the 4-H program in the United States, but to 4-H and youth extension programs in more than 80 countries around the world. These countries have organizations patterned after the United States 4-H program. In Thailand, a developing country located in Southeast Asia, one such program was begun in 1953 called Yuwa Kasetkorn, meaning "young farmer" (hereafter referred to as Y-K). Like 4-H in the United States, Thailand's Y-K has project work as the dominant type of learning experience. Recently, work has begun in Thailand with developing literature and training programs to assist members with their project work.

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<sup>5</sup>Ibid., p. 4.

### Background of the Study

In June of 1978, the National 4-H Council of the United States began a 4-H assistance project "to expand and strengthen the Y-K program of Thailand."<sup>6</sup> With monetary support from the United States Agency for International Development, this three-year project had as one of its essential elements the development of written publications and training programs. However, much monetary and staff support was also required of the Thai Extension Service. Thai personnel and budget planners involved were interested and concerned with the adequacy/usefulness of the literature and training as well as what method was best to train the Y-K youth involved.

Y-K is for rural youth between the ages of 10 and 25.<sup>7</sup> Thai youth up to 25 years of age make up 64 percent of the total population and 86 percent of these youth live in rural areas.<sup>8</sup> Twenty-six percent of the youth in rural areas have no formal schooling. Of the remaining 74 percent who attended some school, 88 percent of all males and 92 percent of all females do not have schooling beyond grade four. Three years after finishing grade four many children are no longer functionally literate.<sup>9</sup> Thus the Y-K program is important to the education of Thailand's youth.

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<sup>6</sup>4-H Assistance to Expand and Strengthen the Yuwa Kasetkorn Program of Thailand, 4-H/Yuwa Kasetkorn Section, Bangkok, (1978), p. 1.

<sup>7</sup>4-H/Yuwa Kasetkorn Thailand Project, National 4-H Council, Washington, D.C., August (1980), p. 4.

<sup>8</sup>The Role of Youth in the Country's Development, Bangkok, cited by 4-H/Yuwa Kasetkorn Thailand Project, National 4-H Council, Washington, D.C., August (1980), p. 4.

<sup>9</sup>The Children and Youth Survey, Thailand 1975, Publication Series E-Sur-No. 10-76, cited by 4-H/Yuwa Kasetkorn Thailand Project, National 4-H Council, Washington, D.C., August (1980), p. 5.

From June of 1979 to December of 1980, the researcher was a youth development volunteer working with the National 4-H Council Thailand Project in Thailand. This study was conducted as a part of that project.

### The Study

#### Purpose

The primary purpose of this study was to determine the effectiveness of three different methods of providing training in poultry raising and their influence upon the potential learners (Thai Y-K members) in the areas of knowledge and application of knowledge.

#### Hypotheses

It was hypothesized that Y-K members receiving training in raising poultry by using a project book and attending training sessions presented by a Y-K extension agent would have greater knowledge in basic poultry raising concepts and would apply a greater amount of learned knowledge to their project work than members using only a project book and members using neither a project book nor attending training sessions.

It was further hypothesized that:

1. Y-K members using a project book and attending training sessions would score higher on an achievement test in basic poultry raising concepts than members using only a project book.

2. Y-K members using only a project book would score higher on an achievement test than members neither using a project book nor attending training sessions.

3. Y-K members using a project book and attending training sessions would show greater gains in test scores between pretest and posttest than members using only a project book.

4. Y-K members using only a project book would show greater gains in test scores between pretest and posttest than members neither using a project book nor attending training sessions.

### Objectives

Two objectives were identified as essential to the study. They state that:

1. Y-K members using a project book and attending training sessions would apply more knowledge when raising poultry than members using only a project book.

2. Y-K members using only a project book would apply more knowledge when raising poultry than members neither using a project book nor attending training sessions.

### Significance of the Study

This study helps answer questions extension educators have concerning methods of training youth in various non-formal education programs. In addition, educational principles tested through this study include that of "the learning process occurs through a wide variety of experiences and subject matter which are unified around a core of purpose."<sup>10</sup> This study used hands-on experience, group training, and project books as the three experiences involved. Johnson and Michaels<sup>11</sup> multi-sensory approach to learning was also tested. It states that learning experiences may be improved through ingenious use of each sense in combination with one or more other senses.

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<sup>10</sup>Burton, p. 10.

<sup>11</sup>Earl A. Johnson and R. Eldon Michael, Principles of Teaching, (Boston: Allyn and Bacon Inc., 1958) p. 163.

Long range benefits from the study include Thai extension personnel having a better understanding of literature needs and methods of development and usage. A recent United States Agency for International Development document points out that in Thailand there is a significant body of new profitable technology, but it is not being used by the average farmer.<sup>12</sup> This study evaluates different methods that can be used to disseminate this new technology to the Y-K youth.

This study builds upon previous research done concerning extension teaching methods. Groves, McCart, Cross, and Long<sup>13</sup> conducted a study involving 4-H literature and compared the effectiveness of publications, a lecture approach, and the lecture-field experiment approach in producing a "knowledge change." This current study also compares different methods used to produce the knowledge change.

This experiment was conducted in one geographic area of Thailand and dealt with one project area. Results can be applied to other project areas in the Y-K program. In addition, 4-H and similar extension youth groups in other developing countries could expect similar results in their own youth programs with the teaching methods dealt with in this investigation.

In short, current educational theories were tested and future extension programs may be affected. In addition, needed research is being completed in testing literature used in extension programs. Other developing countries with non-formal educational programs can look to this study for help in developing curriculum and teaching strategies.

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<sup>12</sup>USAID, Project Proposal and Recommendations for the Review of the Development Loan Committee-Thailand Agricultural Extension Outreach, AID-DLC/P-2216, (1977).

<sup>13</sup>David L. Groves, Gerald D. McCart, Gerald H. Cross, and Brenda D. Long, "An Investigation Into an Instructional Media for Youth Programs-A Case Study", Adolescence (Fall 1978): 509.



### Definition of Terms

The following important terms are defined as they applied to this study:

1. Yuwa Kasetkorn (Y-K). The Thai rural youth organization begun in 1953 under the direction of the Department of Agricultural Extension and the Ministry of Agriculture and Cooperatives. Similar to youth programs all over the world, members are organized into clubs and are encouraged to undertake projects in agriculture, home economics, and related areas. The present program of about 80,000 members is reaching a small portion of the potential 12.3 million rural youth between the ages of 10 and 25.<sup>14</sup>
2. Y-K Agent. A trained Thai youth development worker who has completed education at least as far as a two-year agricultural college. The agent has full-time responsibilities toward the Y-K program within an assigned district.
3. Poultry Raising in Thailand. In the United States, the term poultry refers to any domesticated birds kept for eggs or meat. Poultry in Thailand refers specifically to chickens and ducks. Of the three primary types of chickens raised in Thailand (broilers, layers, and capons), broiler type chickens were raised by Y-K members involved in this study.
4. Project Book. Common name for a piece of 4-H literature designed to assist members in carrying out project work. The 20-page project book used in this study is contained in Appendix A and covers the following concepts:
  - a. What is a Chicken?
  - b. Where Does a Chicken Live?
  - c. What Does a Chicken Eat?

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<sup>14</sup>4-H/Yuwa Kasetkorn Thailand Project, p. 8.

- d. Chickens Can Get Sick Too!
  - e. Special Care for the Laying Flock.
5. Leader/Agent Guide. Group of five lesson plans covering chicken raising and including record keeping, building needs, feeding, vaccination, and sanitation. The lesson plans are contained in Appendix B.
  6. Teaching a Lesson. Process done by a Y-K agent, using a lesson plan that gives a step-by-step method of disseminating the information in the lesson to the Y-K members. Prepared visuals are also used.
  7. Training Session. Period of time used to teach one or more lesson plans to a group of Y-K members.
  8. Method of Training. The three methods used in this study were:
    - a. Method A--Traditional. Y-K members learn poultry raising by participating in a group project that included record keeping. No formal training or printed materials were available to the members in this traditional procedure.
    - b. Method B--Project Book. Y-K members learn poultry raising by participating in a group project that included record keeping. No formal training was provided, but each member did receive the project book.
    - c. Method C--Project Book and Training. Y-K members learn poultry raising by participating in a group project that included record keeping. Each member received the project book as well as the opportunity to attend training sessions presented by a Y-K agent using the leader/agent guide.
  9. Achievement Test. A 100-point test containing 34 true-false questions and 66 multiple choice questions that cover basic poultry raising concepts.
- A copy of the test is contained in Appendix C.

10. Knowledge. Scores obtained from the non-standardized achievement test. Both pretest and posttest scores were used to measure knowledge.
11. Gain in Knowledge. The resulting difference when the pretest score is subtracted from the posttest score for each subject in the study.
12. Application of Knowledge. A total weighted score obtained from a score sheet that evaluates the project, the project site, and the project records. Each Y-K group was given a score, with that score being assigned back to each member in the group. The score sheet is contained in Appendix D.

#### Limitations

The following limitations with regard to validity exist:

1. Possible experimental mortality in this long-term study threatened internal validity.
2. Events beyond the control of the researcher such as field work may have restricted member attendance at training sessions and participation in project work.
3. Use of a non-standardized achievement test threatened internal validity.
4. Pretesting threatened external validity, for generalization to populations that have not been pretested may lack validity.
5. Obtaining results reliable to all Y-K members was limited to one project area and one geographic area in Thailand.

## CHAPTER II

### REVIEW OF RESEARCH AND RELATED LITERATURE

This chapter presents a review of literature and research related to youth in 4-H and related educational programs and youth training. Where possible, literature and research concerning rural youth in Asia was considered. Literature citing experimental research comparing teaching methods for youth groups in developing countries was not found. However, literature relating to various aspects of the study was located. The computer retrieval service at the Kansas State University Library was utilized, including the Educational Resources Information Center (ERIC) and the Agriculture On-Line Access (AGRICOLA), formerly known as CAIN. The Encyclopedia of Educational Research, Education Index, and Current Index to Journals in Education were also searched for related literature.

The review presented in this chapter is organized into the following areas:

1. 4-H and the Y-K program;
2. Personal development and youth;
3. The learning process, knowledge, and its application;
4. Importance of training;
5. Current training problems;
6. Training methods;
7. Curriculum development.

4-H and the Y-K Program

Basic philosophy of the primary aim of the 4-H organization is to help young people become mature, competent, responsible citizens, according to Carter.<sup>1</sup> The organization grew out of the Cooperative Extension Service which was begun through the Smith-Lever Act of 1914. Based on the structure of learning experiences, 4-H club work fits somewhere between the experience of learning and the formal school.<sup>2</sup>

The National 4-H Council was activated by the Cooperative Extension Service of the United States as a private, educational corporation, to assist Extension's educational youth programs. During the past 30 years, the Council has cooperated with over 50 countries throughout the world to assist in the establishment of 4-H or similar programs designed to:

1. Help participating countries gain a broader knowledge and prospective of the importance of educational work with rural youth.
2. Help countries develop effective methods and procedures for giving assistance to rural youth.
3. Provide a stable agricultural economy in future years by developing sound and scientific attitudes in rural youth at an early age.
4. Develop opportunities for further international cooperation and exchange of information and leadership among countries involved.<sup>3</sup>

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<sup>1</sup>G. L. Carter, Jr., "A Conception of 4-H, Part II," Journal of Cooperative Extension (Winter 1963), p. 229.

<sup>2</sup>G. L. Carter, Jr., "A Conception of 4-H, Part I," Journal of Cooperative Extension (Fall 1963), p. 170.

<sup>3</sup>Thailand Project, pp. 2-3.

The investigation of the writer was conducted in Thailand as a part of an assistance project representing a three-way cooperative agreement among the Agency for International Development, the Department of Agricultural Extension, and the National 4-H Council. The organization in Thailand receiving the assistance, known as Y-K, has the following stated purposes:

1. Help members learn new and better ways of farming and homemaking.
2. Teach youth to be dependable and responsible.
3. Give satisfaction of accomplishment.
4. Provide for a meaningful and profitable use of time.
5. Show parents and neighbors the value of newly learned practices.<sup>4</sup>

To help meet these purposes, the Y-K program provides its participants with learning experiences through the use of project work.

#### Personal Development and Youth

Aspects of growth and development resulting from the interaction of the environment on a person are of interest to teachers. Mouly remarked that growth and development refer to the result of the interaction of maturation and learning in making the individual what he is at a given time. Attempts at separating the influence of maturation from learning have thus far been futile.<sup>5</sup>

One of the various aspects of development is intellectual growth. Mouly pointed out that those who attempt to define intelligence use such phrases as ability to grasp relationships, abstract reasoning, ability to

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<sup>4</sup>Ibid., pp. 7-8.

<sup>5</sup>George J. Mouly, Psychology for Effective Teaching (Atlanta: Holt, Rinehart and Winston, inc., 1968), p.136.

learn, ability to solve problems, effectiveness in dealing with one's environment, etc.<sup>6</sup> However, children can be intellectually deprived if they come from an environment of poverty and little schooling. Hess and Shipman sum up the results of a number of studies as follows:

. . . children from deprived backgrounds score well below middle-class children on standard individual and group measures of intelligence (a gap that increases with age); . . . .<sup>7</sup>

Around 80 percent of all Thai youth between 10 and 24 years of age not attending school gave lack of financial support as the reason.<sup>8</sup> Havighurst reported that the most general single mark of the educationally disadvantaged child is the poverty of his family.<sup>9</sup> The educationally deprived are one of the priority groups of extension education programs.

#### The Learning Process, Knowledge, and its Application

To a layman, learning refers to the acquisition of knowledge and skills, according to Mouly. Mouly also stated that change results from both maturation and learning. Psychologists agree that learning refers to change in performance arising from experience.<sup>10</sup>

Previous research on the learning process included the conversation theory. The theory, according to Entwistle, states that learning takes

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<sup>6</sup>Ibid., p. 243.

<sup>7</sup>"Early Experience and the Socialization of Cognitive Modes in Children," vol. 36, cited by Robert J. Havighurst, "Educationally Deprived Youth," Journal of Cooperative Extension (Spring 1969), p. 28.

<sup>8</sup>H-Yuwa Kasetkorn, p. 4.

<sup>9</sup>Robert J. Havighurst, "Educationally Deprived Youth," Journal of Cooperative Extension (Spring 1969), p. 30.

<sup>10</sup>Mouly, p. 298.

place through a dialogue between teacher and student and understanding has to be demonstrated by applying that knowledge to an unfamiliar situation in a concrete non-verbal way. However, Entwistle also pointed out that learning does not necessarily have to take place between teacher and student alone.<sup>11</sup>

Holzner and Marx define knowledge as the communicable mapping of some aspect of experienced reality by an observer in symbolic terms. They go on to suggest that knowledge use, application, and utilization are synonymous.<sup>12</sup> Burton asserts that knowledge and knowledge application should be both objectively measured and subjectively evaluated. According to Burton, measurement refers to the use of objective tests or instruments of precision which yield quantitative data. He goes on to define evaluation as referring to the use of behavior records, inventories, or check lists which yield descriptive, qualitative data.<sup>13</sup>

Scannell and Tracy, in discussing measurement, stated that:

True-false . . . items that are properly written provide effective means of examining students' knowledge of terms, principles, generalizations, and other important facts.

They added that:

Multiple-choice items can measure verbal-level achievement, such as knowledge of dates, names, and symbols, understanding of concepts and principles, the application of formulas, concepts, and principles, and nearly all other achievements that can be measured by paper and pencil tests.<sup>14</sup>

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<sup>11</sup>N. J. Entwistle, "Knowledge Structures and Styles of Learning," British Journal of Educational Psychology 48 (November 1978), p. 255.

<sup>12</sup>Burkart Holzner and John H. Marx, Knowledge Application: The Knowledge System in Society (Boston: Allyn and Bacon, Inc., 1979), p. 93.

<sup>13</sup>William H. Burton, The Guidance of Learning Activities (D. Appleton-Century Co., Inc., 1944), p. 579.

<sup>14</sup>Dale P. Scannell and D. B. Tracy, Testing and Measurement in the Classroom (Atlanta: Houghton Mifflin Company, 1975), p. 99.



In viewing evaluation, Burton attests that the outcomes to be evaluated are usually general and abstract. Yet he goes on to say that subjective evaluations made by competent specialists are necessary, inescapable, and wholly respectable.<sup>15</sup>

#### Importance of Training

Agriculture is the basis of nearly all Asian and Far East countries' economies. Eighty-five percent of the population obtain their livelihood from farming or agro-industry in the rural areas.<sup>16</sup> Marvin suggests that a country that is planning economic growth cannot expect industrial development without concomitant agricultural development and inadequate agricultural production is one of the greatest, if not the greatest, deterrents to economic development.<sup>17</sup>

Husain remarked that all members of the community likely to help increase production must have access to training.<sup>18</sup> Lindley asserted that it is generally recognized that there is a direct relationship between the level of education and the degree of development found within any country. Assistance programs directed toward the agricultural sector must be concerned, either directly or indirectly, with the education.<sup>19</sup> However, educational and training requirements of many

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<sup>15</sup>Burton, Guidance, p. 575.

<sup>16</sup>G. N. Bamford, "Training Youth for Farming in Asia and Far East Regions," Training for Agriculture (1972), p. 7.

<sup>17</sup>R. Paul Marvin, "The Case for Rural Education." American Vocational Journal (May 1970), p. 19.

<sup>18</sup>M. A. Husain, "Rural Poverty and the Potential of Training," Food and Agriculture Organization of the United Nations, Rome, 1978, p. 19.

<sup>19</sup>W. I. Lindley, "Agricultural Education in Developing Countries," Agricultural Education Magazine (October 1975), p. 77.

millions of youth facing the problem caused by poverty and unemployment are not being met, according to Sachdeva.<sup>20</sup> Bamford suggests that preparing youth for rural living and particularly farming is a most important part of education.<sup>21</sup> Maitra commented that non-formal education should help the learners reduce the disparity and inequality which exists between them and the more fortunate sections of society.<sup>22</sup>

Sachdeva suggests that the formal schooling system cannot solve the problems of youth even if it is reformed. He concluded that the answer may be to extend non-formal education to the educationally deprived youth.<sup>23</sup>

#### Current Training Problems

Many countries in the Asian and Far East region have developed rural youth movements based on the village youth club following the 4-H or Young Farmer Club pattern. Bamford concluded that because of the large voluntary element, it can be operated on a large scale at low cost compared with other approaches.<sup>24</sup> However, Marvin pointed out that one of the principal weaknesses of extension programs in most countries has been their autonomous organization.<sup>25</sup> In addition, Maitra stated that foreign models, however good they are in their own country, cannot be grafted in

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<sup>20</sup>J. L. Sachdeva, "Non-Formal Education for the Age Group 15-25," Indian Journal of Adult Education (June 1975), p. 11.

<sup>21</sup>Bamford, p. 7.

<sup>22</sup>Satyen Maitra, "Organization of Non-Formal Education Programs," Indian Journal of Adult Education (May 1975), p. 19.

<sup>23</sup>Sachdeva, p. 12.      <sup>24</sup>Bamford, p. 9.

<sup>25</sup>Marvin, p. 19.

toto. Any foreign model or new method must consider that the limited educational background of students requires that much of the teaching be simple and elementary.<sup>26</sup> A 1970 World Conference on Agricultural Education and Training concluded that low budgets, shortage of suitable textbooks, and too great a turnover of teaching staff are among other problems associated with developing educational programs in a developing country.<sup>27</sup>

Once a training program is developed, another problem is that in a largely illiterate society a strong urge to learn, by and large, does not exist.<sup>28</sup> Ability to learn can also be affected by nutrition. Although not as severe as in some countries, malnutrition does exist in Thailand. Few youth actually die, but malnutrition does take its toll in low capacity for learning and physical work.<sup>29</sup>

Looking specifically at animal science education, Johnston remarked that animal science education has expanded rapidly in the developing world. But he also pointed out that this expansion has been with western concepts of intensive animal husbandry and traditional production systems of many countries have been neglected and viewed as difficult or impossible to improve.<sup>30</sup>

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<sup>26</sup>Maitra, p. 6.

<sup>27</sup>World Conference on Agricultural Education and Training Report, Food and Agriculture Organization of the United Nations, 1970, p. 36.

<sup>28</sup>Maitra, p. 6.    <sup>29</sup>4-H/Yuwa Kasetkorn, p. 6.

<sup>30</sup>James E. Johnston, "Animal Sciences Curricula," Strategies for Agricultural Education in Developing Countries (January 1976), p. 1.

### Training Methods

Numerous methods of teaching and training are available to extension educators to help them create an effective learning environment. Akhouri and Singh indicated that selection of the right extension teaching methods for given situations, audience and practices are the real secrets of success of extension workers. All extension teaching methods may not be equally effective in teaching all practices.<sup>31</sup>

Clark, referring to developing countries, asserted that it was imperative that the focus of extension in these countries shift rapidly from the individual to the group in order to educate the masses of people.<sup>32</sup> A study comparing training methods in eight developing countries in Asia and the Far East concluded:

. . . 'onfarm-within community' approach such as provided by rural youth club type programs, supplemented by specific short course training, has the greatest potential for training the larger masses of rural youth who will (and must) earn their livelihood from farming in Asia.<sup>33</sup>

A project in Ceylon (Sri Lanka) concluded several significant lessons, including that:

Agricultural education and training can be given most effectively and efficiently to farm youth when the teaching is directly related to their recognized needs.

Another lesson was that

Individual home farm projects provide an excellent method for teaching new farming practices, including the economic and social aspects of the new technology.<sup>34</sup>

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<sup>31</sup>M. M. P. Akhouri and R. P. Singh, "Extension Teaching Methods," Indian Journal of Adult Education (November 1974), p. 118.

<sup>32</sup>G. Cameron Clark, Training Programs in Asia (1972), p. 12.

<sup>33</sup>Bamford, p. 39. <sup>34</sup>Clark, pp. 12-13.

Thus, as Maitra observed, any learning materials prepared must take into account the special needs and problems of the learner. In addition, a non-formal education program will be largely successful if it can succeed in making it not only instructive but also entertaining. One must make the whole learning process a participating one.<sup>35</sup>

Experimental studies relating to training youth by Groves, McCart, Cross, and Long comparing the effectiveness of publications, a lecture approach, and the lecture-field experiment approach in producing a change in knowledge in Virginia 4-H members in a tree seedling program. All approaches produced a significant gain in knowledge, but there were no significant differences among the approaches. They concluded that if the publications are read, they are as effective for transmitting knowledge as a personal media approach.<sup>36</sup>

McLeod and Adams tested the hypothesis that field independence would interact with level of guidance by randomly assigning students in five mathematics classes to low or high guidance treatment groups for a week of instruction. Students were assessed on field independence and general reasoning. They found achievement significantly better in the high guidance group than the low guidance group on both the posttest and retention test.<sup>37</sup>

A study by Hirsch tested the effects of guided discovery and two individualized instructional packages on initial learning, transfer, and retention. Intact classes of students in second-year algebra were

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<sup>35</sup>Maitra, pp. 7-8.    <sup>36</sup>Groves and others, p. 509.

<sup>37</sup>Douglas B. McLeod and Verna M. Adams, "Individual Differences in Cognitive Style and Discovery Approaches to Learning Mathematics," Journal of Educational Research (July/August 1979), p. 317.

assigned to one of three treatment groups. Pretesting was done and a series of four posttests specific to the learning tasks were used.

Results of the Hirsch study showed students guided to discovery of the structure of the field of complex numbers performed significantly better on tests of initial learning, vertical transfer, and lateral transfer. Differences on the retention were not significant. He concluded that guided discovery techniques were a more viable alternative to conventional instruction than individualized instruction packages.<sup>38</sup> In a similar study, Barr found no significant difference between the treatments at the posttest stage, but a significant difference between treatments was found at the retention stage.<sup>39</sup>

Carter noted that it may be difficult to translate research findings couched in a formal setting directly to the 4-H situation because of the informal education nature of 4-H. However, if 4-H is viewed as an educational undertaking, as apparently it was intended to be, such research findings and their interpretation should have direct application.<sup>40</sup>

In short, the approach taken rather than the motive of the teacher or agent often makes the difference between success and failure. Anderson pointed out that an agent or specialist must know his subject matter, but

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<sup>38</sup>Christian R. Hirsch, "Guided Discovery and Individualized Instruction," Journal for Research in Mathematics Education (November 1977), pp. 366-367.

<sup>39</sup>David C. Barr, "A Comparison of Three Methods of Introducing Two-Digit Numeration," Journal for Research in Mathematics Education (January 1978), pp. 41-42.

<sup>40</sup>Carter, Part II, p. 230.

reactions to his methods may control how much people learn. People learn from what they do and not necessarily from what they are told.<sup>41</sup>

### Curriculum Development

Most training methods involve the use of some sort of curriculum. Rush, Lawter, Thomason, and Atkisson indicated that a sound educational program requires deliberate incorporation of available resources into the learning environment.<sup>42</sup> Curriculum itself can be defined as intended engagements of the learner with persons, materials, ideas, techniques, and values within a specific time and space arrangement.<sup>43</sup> Parsons revealed that with curriculum the teacher can become the facilitator of learning rather than the traditional dispenser of knowledge. The teacher has more time to help the learner identify educational needs and select appropriate strategies for meeting these needs.<sup>44</sup>

Various procedures are used to develop curriculum. Among those that Schaffarzick outlines that most developers use are as follows:

1. Determine what types of new curriculum are needed.
2. Use results of research on learning and psychological development as a guide to students' capabilities.
3. Accomplish their work through coordinated and cooperative efforts of groups of people having various competencies.

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<sup>41</sup>Ernest W. Anderson, "An Approach to Effective Teaching," Journal of Cooperative Extension (Spring 1963), p. 9.

<sup>42</sup>Rush and others, "Essential Components for Effective Curriculum Development," Peabody Journal of Education (July 1976), p. 297.

<sup>43</sup>Rodney Tillman, "What's Right in Curriculum Development and Trends," Educational Horizons (Spring 1976), p. 123.

<sup>44</sup>Parsons and others, "Criteria for Selecting, Evaluating or Developing Learning Modules," Educational Technology (February 1976), p. 31.



4. Attempt to supply those who must implement the new curricula with requisite understandings of new subject matter and teaching techniques by providing staff development materials and training.
5. Test the curricula in some fashion at various stages of completion and revise curricula on the basis of such testing.<sup>45</sup>

Various studies involving curriculum testing have been conducted. Thomas investigated the influence of pictorial illustrations with written text and previous achievement on the comprehension of fourth grade science students. He compared color realistic photographs with written text, photographs integrated within the written text, and written text with no pictures. Thomas found that the inclusion or exclusion of pictures does not influence comprehension. However, it did show that achievement levels were an accurate predictor of a student's ability to comprehend the text. Thus, attention may need to be paid to the readability of the text for different achievement levels.<sup>46</sup>

In a study of the readability of 4-H project books, Reyburn found that a need exists to shift the production of 4-H materials from the seventh and eighth grade readability level to the fifth and sixth grade level.<sup>47</sup> Most studies concerning curriculum development and cognitive development have been conducted in Europe and America. But as Brock pointed out, it can not be assumed that these findings also apply to

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<sup>45</sup>Jon Schaffarzick, "Procedural Alternatives in Curriculum Development," Educational Leadership (May 1976), pp. 571-572.

<sup>46</sup>James L. Thomas, "Influence of Pictures with Written Text," The Southern Journal of Educational Research (Winter 1978), p. 44.

<sup>47</sup>Jerry H. Reyburn, "Are 4-H Project Books Readable?" Journal of Extension (September/October 1979), p. 13.



children with different culture, different language structure, and whose mental development possibly has been affected by malnutrition. For example, one study in Kenya which Brock cited found that many of the students there look only at single features instead of the whole. Children in that study mistook a tortoise for a snake. Brock stressed that testing of Asian children clearly is needed to give a firm base for curriculum reform.<sup>48</sup>

### Summary

Preceeding sections of this chapter present a review of research and writings which relate to this study. Reviewed literature offers insight into youth development, especially intellectually. In addition, literature on the importance, problems, and methods of training youth was reviewed. The main concerns are not to only provide training to educationally deprived youth, but provide it in the best possible manner.

Related literature advocated the need for training since the primary sector and rural areas will continue to play important roles in developing economies. Under-utilization of human resources is now holding up the progress of national economies. Most writers felt this trend could be reversed through innovative education and training programs.

Research indicates that different training methods can make a difference in the amount of learning that takes place. In addition, research needs to be done within the developing countries themselves since cultures, languages, and stages of mental development may differ.

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<sup>48</sup>Anthony Brock, "Educational Problem in Asia," Intellect (March 1974), p. 392.

The information in this review offered the researcher with possible methods and strategies of developing and testing curriculum. It also provided possible answers to objectives of the study as well as providing a background of information for the chapters that follow.

## CHAPTER III

### METHODS AND PROCEDURES

This study compared the traditional with two alternative methods of training Y-K members in Thailand in poultry raising. Scores from a pretest-posttest achievement test were compared for differences between groups and differences in gains in scores between pretest and posttest. Differences between scores received by each group on application of knowledge was also compared.

Before data could be collected and analyzed, the following procedures needed to be accomplished:

1. Define the population from which the data were obtained;
2. Select a unit of instruction appropriate for all Y-K members in those clubs from which the sample would be selected and which the Y-K members had little or no prior formal instruction;
3. Develop a project book, lesson plans, and visual aids for the unit of instruction;
4. Develop and pretest an achievement test to measure participants' prior knowledge of the subject matter and knowledge gained through instruction and experience at the completion of the learning process.
5. Develop a score sheet to evaluate the application of any knowledge to real life situations;

6. Develop a procedure for securing the needed data on all Y-K members involved;
7. Select the experimental and statistical designs appropriate to test the hypotheses of the study;
8. Select statistical treatments to analyze data.

Data were obtained from Y-K members in nine Y-K groups in one province in the country of Thailand. A map of Thailand that shows where the data were collected is contained in the Appendix. The members' prior knowledge of the subject matter and retention of the subject matter were determined by use of a non-standardized test developed by the researcher.

#### The Sample

Inability of the researcher to manipulate the Y-K members belonging to Y-K groups resulted in the decision to assign intact groups to the various treatment groups. Winer pointed out that when "the experimenter is not at liberty to assign the subjects at random to the different methods of training, he is required to use groups that are already formed."<sup>1</sup> If these intact groups were not selected on the basis of variables directly relevant to the study, then, according to Winer, ". . . for most practical purposes the groups can be considered as random samples from a common population."<sup>2</sup>

The population was defined as those Y-K members planning to participate in a group broiler chicken raising project within each of nine Y-K groups, three each from three districts within one province in

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<sup>1</sup>B. J. Winer, Statistical Principles in Experimental Design (New York: McGraw-Hill Book Co., 1962), p. 588.

<sup>2</sup>Ibid., p. 588.

Thailand. Permission to conduct the study in three districts in the province of Nakorn Pathom between March 1 and June 30 of 1980 was granted by national, provincial, and district Y-K personnel. On January 17, 1980, all Y-K personnel involved in the study met and the researcher explained the purpose of the study, stated the criteria for the sample, and explained the procedure and time schedule to be followed. A map of Thailand indicating the location of the study is contained in Appendix E.

#### Assignment of Treatment Groups

Each Y-K group was randomly assigned to one of three treatment groups using a random draw-replacement technique. After being assigned to a treatment group, each Y-K group was given a number to facilitate coding of data and assure promised anonymity.

Uncontrollable factors made it necessary to reject data from certain subjects. All data were rejected from subjects who (1) failed to complete either the pretest or posttest; or (2) were not present for at least four of the five lesson plans when presented at training sessions. The latter case refers only to Y-K members in the group designated to receive training sessions. Table 1 summarizes numbers of Y-K members in each of the nine Y-K groups, the group type, and each group's geographic location (district). In addition, the Y-K agent assignment is also shown. For example, as can be seen in Table 1, Y-K agent X was assigned to District 1 and the experimental groups in Y-K group type A. The end result was that each of the three Y-K agents were assigned to one district containing three experimental groups, each receiving a different method of treatment.

TABLE 1  
Y-K GROUP ASSIGNMENTS

Experimental Groups	Individual Y-K Group Type*	District	Y-K Agent
Control (N = 11)	A		
Experimental 1 (N = 9)	A	1	X
Experimental 2 (N = 15)	A		
Control (N = 8)	B		
Experimental 1 (N = 11)	B	2	Y
Experimental 2 (N = 6)	B		
Control (N = 10)	C		
Experimental 1 (N = 15)	C	3	Z
Experimental 2 (N = 11)	C		

\*Variations between group types result from differences in geographic location (district) and differences in the Y-K agents.

#### Instructional Unit

Selection of an appropriate unit of instruction, specific lesson plans, and areas to cover in the project book were determined by Y-K project type and member needs. The criteria used in selection of the instructional unit were as follows:

1. The instructional unit be in a project area that Y-K members would normally participate.
2. The instructional unit covers an area not previously taught to Y-K members through project books and/or lesson plans.

3. The subject knowledge gained by the students as a result of the project book and/or lesson plans must be of such a nature that it could be objectively measured.
4. The lesson plans could be taught in a manner which could reduce individual teacher influence.

Considering these criteria, it was decided to prepare the instructional unit in poultry raising, more specifically in the area of raising chickens.

#### Components of the Instructional Unit

Information presented in the project book and lesson plans was obtained from 4-H project books on poultry raising from the United States, Thai university and extension agriculture specialists, and other references.

#### Project Book

Because of the low education level of the Thai youth and a wide age range of youth involved in the Y-K program, only basic information about poultry raising was presented in the project book. Areas covered in the project book were characteristics of chickens, housing and feeding, health, and management practices.

After initial manuscripts of the project book and final copies were prepared, translations were reviewed by two animal science instructors at Kasetsart Agricultural University in Bangkok. Names of the instructors appear in Appendix F. When final reviews and illustrations by an artist were completed, 20,000 copies were printed for distribution. An English copy of the project book is included with this report.

### Lesson Plans

Criteria similar to those used for the project book were also considered in the development of lesson plans for the leader/agent guide. In addition, there was a need for selective manipulation control through preparing uniform lesson plans which provided a greater opportunity to determine if the treatment variable had a significant effect on student learning. A standard lesson plan style used by community development workers in Thailand and titled "Working With Villagers" was utilized. Developed by the the American Home Economics Association, it included:

1. A summary for planning to teach the lesson including a statement of the problem, important ideas, objectives, and materials needed.
2. A complete lesson plan including things to do to:
  - a. Get the group interested.
  - b. Get discussion going
  - c. Share information.
  - d. Review and sum-up
  - e. Follow-up.
3. A set of visual aids needed for each lesson.

The information in the project book and lesson plans were compared against the achievement test to assure all pertinent information had been included. All materials were delivered to the Y-K agents prior to the time of instruction. The three agents involved also went through a practice session in teaching the first lesson to assure they knew how to use and teach from the lesson plans.



### Development of the Achievement Test

The achievement test was developed to measure knowledge of each Y-K member involved both before and after the treatments were administered. The same test questions were used on both the pretest and posttest, the only difference being a rearrangement in the order of questions. A copy of the pretest is contained with this report.

Information and objectives in the project book and lesson plans was used to determine the nature of questions included on the test. Kasetsart Agricultural University instructors were again utilized to review the test. The initial test included 111 multiple choice and true-false questions. The questions were field tested on February 21 and 22, 1980. Twenty-five Y-K members not involved in the actual study cooperated in the field testing. Members were asked to circle any test item they could not interpret. After the revision, 100 questions were selected for the final test.

Content validity was taken into consideration in the development of the test. According to Kerlinger,

Content validation is guided by the question, 'Is the substance of content of this measure representative of the content or the universe of content of the property beign measured?'<sup>3</sup>

In order to assure a higher level of content validity, a tentative draft of each test was evaluated by the two animal science instructors at Kasetsart University mentioned earlier. Each suggestion and/or criticism was used to eliminate misinterpretations resulting from the wording of the questions or translation of the questions.

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<sup>3</sup>Fred N. Kerlinger, Foundations of Behavioral Research (New York: Holt, Rinehart, and Winston, Inc., 1965), p. 447.

Reliability, the precision of measurement, was also maintained. Comparing pretest scores of the three experimental groups is one indication of reliability. The scores ranged from 58.5 for the Experimental 2 group, 61.4 for the Experimental 1 group, to 63.9 for the Control. Since not a great deal of variation existed between the mean scores, some degree of reliability was assumed.

#### Development of the Score Sheet

Development of a score sheet to evaluate application of knowledge to the actual project work was done in a manner similar to development of the achievement test. Score sheets used for 4-H poultry projects in the United States were utilized. Kasetsart University instructors again assisted in the development of the score sheet.

The score sheet involved a scaled response. Twenty aspects of the project work were evaluated and given a score between one and five inclusive (one being poor and five being excellent). Both the project itself and the project records were evaluated in addition to the site where the project was located.

#### Procedures Used in Collecting Data

The pretests, project books, leader/agent guide, and visual aids were delivered one week before administering the pretest to the three Y-K agents involved. This was done at a bi-weekly agent training day. Also at that time, each agent practiced teaching lesson one. Y-K agents were also instructed to conduct the experiment as they would a regular Y-K group monthly meeting. They were told not to let Y-K members know that an experiment was being conducted. The researcher attended all

Y-K group meetings where pretesting, instruction, and posttesting was conducted as well as travelling with the Y-K agents when they made project site visits. The researcher attended all groups equally and worked with the participating groups several months prior to beginning the experiment.

A member information sheet was developed to collect personal data on each Y-K member involved. The information sheet was attached to the pretest and completed by each member prior to taking the pretest. A copy of that sheet as well as one used with the posttest is contained in Appendix G. Project books were given to members in the test groups and withheld from the control group at the completion of the pretest. Lesson plans one through five were taught either separately or in pairs or threes to the three groups designated to receive that training. All pretesting was completed during March of 1980. On April 22, all nine Y-K groups began identical broiler raising projects. On May 27 and 28, with just over half of the project work completed, all projects and project sites were scored for application of knowledge. During the month of June of 1980 all posttesting was completed.

### The Design

The study evolved around two components: the experimental design and the statistical design. Both components served a separate and distinct function, but together formed an inseparable whole. Each component was selected or designed to assure the investigator that adequate data would be collected. Another consideration was that the data collected could be treated with appropriate statistical procedure in order to meet the primary purpose of the study.

### The Experimental Design

The experimental design for this experiment is defined by Campbell and Stanley as Design 10, "Nonequivalent Control Group Design."<sup>4</sup> This design is identical to the pretest-posttest control group design in all respects except for the random assignment of subjects to conditions.<sup>5</sup> Intact groups of Y-K members were assigned randomly to treatment groups. The design required the researcher to administer a pretest to all subjects and administer a posttest to the same subjects. The design is presented diagrammatically in Figure 1.

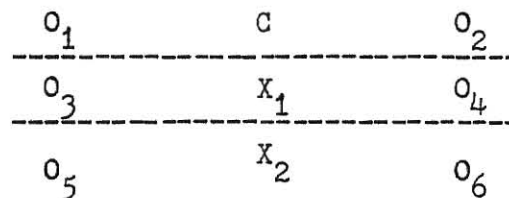


Figure 1.--Paradigm of Non-Equivalent Control Group Design

A complete diagram of the design and time schedule is shown in Figure 2. Independent variables of the study were the three different methods of training involved as shown in Figure 2. The dependent variables included: 1) test scores on the posttest; 2) gains in scores between the pretest and posttest; and 3) scores on the application of knowledge score sheet.

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<sup>4</sup>Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally and Co., 1963), p. 47.

<sup>5</sup>Bruce W. Tuckman, Conducting Educational Research (New York: Harcourt Brace Jovanovich, Inc., 1978), p. 142.

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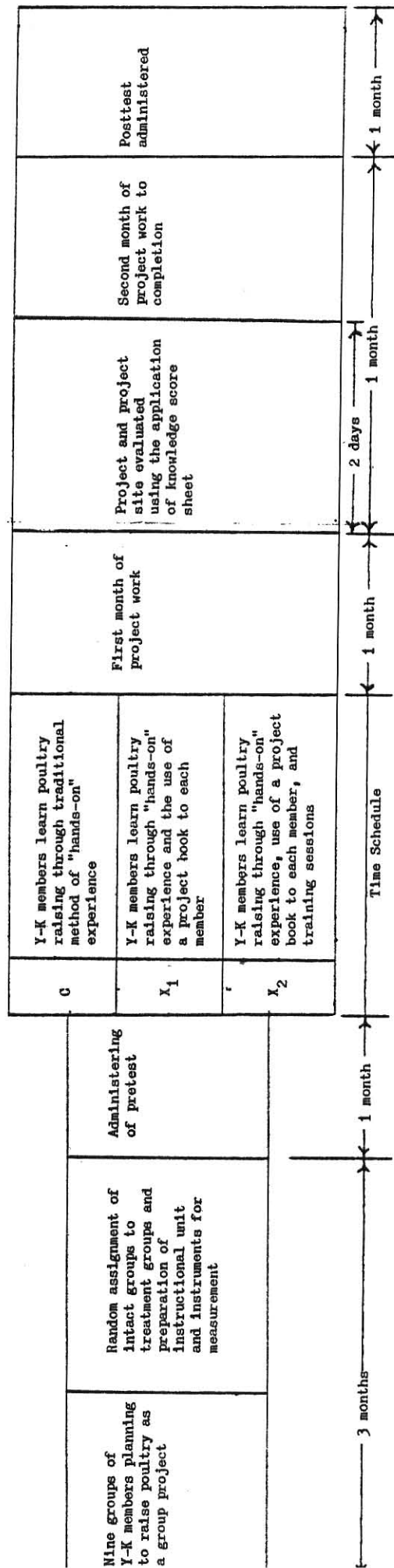


Figure 2.--The experimental design.

To increase internal validity, measures were taken to control a number of extraneous variables. Efforts were made to account for: 1) selection of Y-K groups; 2) random assignment of Y-K groups to treatments; 3) scoring of application of knowledge done by individuals unaware of the study or group status within treatment groups; and 4) controlling awareness of the study by each subject involved assured the investigator that all subjects were treated in a similar manner.

#### Experimental Control

Experimental control provided a means whereby the investigator was assured that any measureable change was due to independent variables and not due to uncontrolled extraneous variables. Aside from statistical control, the researcher imposed selective manipulation controls by:

1. Random assignment of the nine intact groups to treatments.
2. Assigning three individual Y-K groups, each of a different experimental type, to each of the three geographic districts in the study.
3. Reducing influence from Y-K agents by preparing detailed lesson plans complete with operating procedure and visual aids.
4. Assigning all Y-K members in one group to the same independent variable to prevent student collaboration.
5. Determining the members' prior knowledge on the instructional unit by administering a pretest.

The physical manipulation controls were as follows:

1. Designing all lesson plans in such a way that they could be taught in a normal village setting where facilities such as electricity were not always available.



2. The administration of all pretests within a period of one month (prior to lesson plans being taught) at the monthly Y-K meeting.
3. The administration of all posttests during the month immediately following the end of the project work to reduce effects of history and maturation.
4. Providing all nine Y-K groups the same "hands-on" learning experience by:
  - a. Providing all groups with 100 broiler chicks on the same day.
  - b. Providing all feed and vaccine needs for each group.
  - c. Assuring that each Y-K agent did not give special attention to any of the three groups with which each agent worked.
  - d. Providing a means of marketing the produce if Y-K groups had no market available.
  - e. Charging each group the same amount of expenses for the chicks and feed cost.
5. Using four qualified persons unaware of group status to score application of knowledge to reduce bias.
6. Withholding the project book from all Y-K members not in the study to prevent any possible contamination of the control group from other Y-K members.

#### Statistical Design

Campbell and Stanley stated that good experimental design is separable from the use of statistical tests of significance.<sup>6</sup> They

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<sup>6</sup>Campbell and Stanley, p. 22.

continued by saying that experimental design provides for comparisons that are interpretable,

. . . then statistical tests of significance come on for the decisions as to whether or not the obtained differences rises above the fluctuations to be expected in cases of no true difference for samples of that size."<sup>7</sup>

In their discussion of the statistical treatment for this design, Campbell and Stanley call attention to analysis of covariance for testing the effects of the experimental variable without the procedure of matching. Simple gain scores are also applicable but usually less desirable than analysis of covariance.<sup>8</sup> Kennedy advises the use of the Scheffe' test to make pairwise and compound comparisons between groups with unequal n values.<sup>9</sup>

#### Analysis of Data

The IBM computer at Kansas State University was utilized to speed calculations of the statistical tests. The Biomedical Data Package (BMDP2V) was selected to perform a one-way analysis of covariance for each dependent variable using unequal cell sizes. The Statistical Package for the Social Sciences (SPSS) was utilized to conduct a one-way analysis of variance. This program also allowed for the Scheffe' test to be run for posteriori contrasts. To insure consistency and accuracy, all data were coded and placed on code sheets by the investigator. Data cards were punched directly from the code sheets.

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<sup>7</sup>Ibid., p. 22.

<sup>8</sup>Ibid., p. 49.

<sup>9</sup>John Joseph Kennedy, An Introduction to the Design and Analysis of Experiments in Education and Psychology (Washington, D.C.: University Press of America, Inc., 1978), p. 212.

The one-way analysis of covariance was run on adjusted posttest scores and a one-way analysis of variance was run on gain scores. In each case a Scheffe' test identified statistical significance between groups at the .05 level of probability.

## CHAPTER IV

### ANALYSIS OF DATA

This chapter presents the statistical analysis and tabulation of findings of the study. In addition to demographic data obtained from each Y-K member, pretest and posttest scores were collected from three groups--control, Y-K members trained in poultry raising through the use of a project book, and Y-K members trained in poultry raising through the use of a project book and training sessions.

One-way analysis of covariance and one-way analysis of variance were employed for the analysis of adjusted posttest mean scores and gains between scores on the pretest and posttest, respectively. Four hypotheses were tested at the .05 level of significance using these methods. The Scheffe'<sup>1</sup> test was also used to test all possible comparisons between means and gains.

In addition, the nine individual Y-K groups were ranked according to the application of knowledge scores assigned by four people using the designed application of knowledge score sheet. Table 1 in Chapter III summarizes numbers of Y-K members in each of the nine Y-K groups, the group types, and each group's geographic location and Y-K agent assignment. No appropriate statistical test was found that would effectively test differences between groups with such a small number of scores. The

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<sup>1</sup>John Joseph Kennedy, An Introduction to the Design and Analysis of Experiments in Education and Psychology (Washington, D.C.: University Press of America, Inc., 1978), pp. 212-218.

analysis employed here, however, searches for patterns within the rankings.

#### Selected Characteristics of Y-K Members

Prior to pretesting and posttesting, personal information was collected from each Y-K member using member information sheets. Tables 2 through 5 present selected characteristics of the three experimental groups. As indicated in Table 2, there were 96 Y-K members involved in the study. Their average age was 17 years. In addition, the members had an average of five years of formal schooling and had been members of a Y-K club an average of one year.

TABLE 2  
AGE, YEARS SCHOOLING, AND YEARS MEMBERSHIP IN Y-K

Experimental Group	Number	Average		
		Age	Years Schooling	Years Y-K Membership
Control	29	18	5	2
Experimental 1	35	16	6	1
Experimental 2	32	17	5	1
TOTALS	96	17	5	1

These numbers generally agree with those obtained from a Benchmark Survey<sup>2</sup> of the Thai province where the research was conducted. That survey revealed that the average age of the Y-K members in the province was 16 years. Three other provinces also surveyed in the country indicated the average age of Y-K members to be 17 years. In addition,

<sup>2</sup>Benchmark Survey Report, 4-H/Yuwa Kasetkorn Section, Bangkok, 1979.

the survey found in all four provinces that the majority of the Y-K members had only completed four years of formal education.

Figures contained in Table 3 show that over two-thirds of these Y-K members were girls. Benchmark Survey<sup>3</sup> findings reported 54 percent of the members in the province were girls. That number was as high as 68 percent in the other three provinces surveyed.

TABLE 3  
SEX OF Y-K MEMBERS

Experimental Group	Male		Female	
	Number	Percent	Number	Percent
Control	7	24	22	33
Experimental 1	13	45	22	33
Experimental 2	9	31	23	34
TOTALS	29	100	67	100

Nearly all the members' fathers were farmers as shown in Table 4. Eighty-nine of the 96 members were a son or daughter of a farmer. Again, the Benchmark Survey<sup>4</sup> indicated that most of the members in the province were farm youth.

<sup>3</sup>Benchmark Survey Report, p. 2.

<sup>4</sup>Benchmark Survey Report, p. 31.

TABLE 4  
OCCUPATIONS OF Y-K FATHERS

Experimental Group	Farmer		Laborer		Government		Total Percent
	Number	Percent	Number	Percent	Number	Percent	
Control	24	83	4	14	1	3	100
Experimental 1	34	97	1	3	0	0	100
Experimental 2	31	96	1	4	0	0	100
TOTALS	89		6		1		

Table 5 discloses the Y-K members' previous experience with poultry. Sixty-one of the members had previously raised poultry and four had worked on a poultry farm. In addition, 27 members had received poultry raising training from extension personnel and 10 had judged poultry.

TABLE 5  
PREVIOUS EXPERIENCE WITH POULTRY

Experimental Group	Raised Poultry		Worked on Poultry Farm		Extension Training		Judged Poultry	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Control	22	76	1	3	12	41	6	21
Experimental 1	22	63	3	9	1	3	2	6
Experimental 2	17	53	0	0	14	44	2	6
TOTALS	61		4		27		10	

### Test Mean Scores

Hypotheses one and two theorized that different training methods would affect posttest scores. Hypothesis one stated that members using a project book and attending training sessions would score higher on the achievement test than members using only a project book. Hypothesis two theorized that members using a project book would score higher on the achievement test than members using neither a project book nor attending training sessions.

Data summarized in Table 6 reveals that the pretest mean score for the three experimental groups was 61.2 while the posttest mean score for the same groups was 69.0. After posttest scores were adjusted to remove pretest influence, statistical tests deduced that there was significance between the Experimental 2 and Experimental 1 groups and between the Experimental 2 and Control groups. However, no significant difference was found between the Experimental 1 and Control groups. Thus hypothesis one was confirmed and hypothesis two was rejected.

TABLE 6  
PRETEST, POSTTEST, AND ADJUSTED MEAN SCORES

Experimental Group	Number	Pretest Mean Score	SD	Posttest Mean Score	SD	Adjusted Mean Score <sup>a</sup>
Control	29	63.9	8.4	69.7	8.9	67.6
Experimental 1	35	61.4	11.3	67.7	10.7	67.5
Experimental 2	32	58.5	9.7	69.9	8.5	71.9
TOTALS	96	61.2		69.0		

<sup>a</sup>Adjusted mean scores connected by a solid line indicate no significant difference between mean scores.



A study by Groves, McCart, Cross, and Long concluded that if read, publications are as effective as a personal media approach to increase knowledge.<sup>6</sup> The researcher found in this study results that disagreed with that conclusion. However, it could not be verified that Y-K members in the Experimental 1 group had actually read the project book. Results in Table 6 did agree with McLeod and Adams<sup>7</sup> who found achievement significantly higher in groups with high amounts of guidance than with groups with lower amounts of guidance. The researcher found in this study that the high guidance group, Experimental 2, scored significantly higher (71.9) on the posttest with adjusted mean scores than the lower guidance groups of Experimental 1 (67.5) and Control (67.6). These results also agreed with those by Hirsch<sup>8</sup> which concluded that guided-discovery techniques of teaching or training were better than individualized instruction. These results suggest to the researcher that the role of the Y-K agent in the learning process is an important one. The extra guidance and training provided by the agent is significant in increasing knowledge.

#### Gain Scores

Hypotheses three and four theorized that different training methods would have an impact on gains in test scores between pretest and posttest. Hypothesis three assumed that Y-K members using the project book and attending training sessions would show greater gains in test scores

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<sup>6</sup>Groves, McCart, Cross, and Long, p. 509.

<sup>7</sup>McLeod and Adams, p. 317.

<sup>8</sup>Hirsch, p. 367.

between pretest and posttest than members using only a project book. Hypothesis four supposed that Y-K members using a project book would show greater gains in test scores between pretest and posttest than members using neither a project book nor attending training sessions.

Gain in mean score was 5.4 for the Control, 6.5 for Experimental 1, and 11.5 for the Experimental 2 group. Using a Scheffe'<sup>9</sup> test to make pairwise and compound comparisons between groups, Table 7 reports that there was no significant difference between the Experimental 1 and Control groups. However, significance was found between the Experimental 2 and Experimental 1 groups and between the Experimental 2 and Control groups. As a result, hypothesis three was accepted while hypothesis four was rejected.

TABLE 7  
GAIN SCORE MEANS

Experimental Group	Number	Gain Score Mean <sup>a</sup>	SD
Control	29	5.4	5.1
Experimental 1	34 <sup>b</sup>	6.5	6.2
Experimental 2	32	11.5	7.8
TOTALS	95	7.8	

<sup>a</sup>Gain score means connected by a solid line indicates no significant difference between mean scores.

<sup>b</sup>Due to computer selection of input data, one subject's data was deleted by the computer.

<sup>9</sup>Kennedy, pp. 212-218.

None of the research reviewed in Chapter II compared gains in test scores. However, the analysis showed the same experimental groups significantly different for gain scores as those groups significantly different for test mean scores as reported in Table 6. The researcher assumes then that conclusions concerning the importance of training by Y-K agents on gain scores can be similar to those already drawn concerning the importance of training by Y-K agents on mean scores.

#### Application of Knowledge

The two objectives of the investigation stated that different training methods would affect the amount of knowledge the Y-K members apply to actual poultry raising projects. Objective one assumed that Y-K members using a project book and attending training sessions would apply more knowledge when raising poultry than members using only a project book. Objective two supposed that Y-K members using the project book would apply more knowledge when raising poultry than members using neither a project book nor attending training sessions.

Table 8 ranks the nine Y-K groups by application of knowledge score from highest to lowest. The table shows no significant pattern of experimental groups nor of group types in the ranking of the Y-K groups. This suggests that type of training has no affect upon application of knowledge to actual practice. Again none of the previous research reviewed compared experimental groups on application of learned knowledge to actual practice.

TABLE 8

RANKING OF INDIVIDUAL EXPERIMENTAL GROUPS ACCORDING TO  
APPLICATION OF KNOWLEDGE SCORES

Rank	Experimental Group	Group Type <sup>a</sup>	Score
1	Control	C	86.5
2	Experimental 2	B	77.0
3	Experimental 1	B	76.5
4	Experimental 2	A	74.8
5	Control	B	70.5
6	Experimental 1	C	70.2
7	Experimental 1	A	66.8
8	Experimental 2	C	66.5
9	Control	A	62.8

<sup>a</sup>Variations between group types result from differences in geographic location (district) and differences in the Y-K agent.

### SUMMARY

Data presented in this chapter were obtained from member information sheets, pretest and posttest scores for each member, and application of knowledge scores for each of the nine individual groups. These data summarize the mean scores on pretests and posttests and gains in scores between pretests and posttests. The data also summarizes the ranking of the nine individual groups according to application of knowledge scores.

The average member was 17 years old, had five years of formal schooling, had been in Y-K for one year, and was a farm youth. Over two-thirds of the members were girls and nearly two-thirds had previously raised poultry.

Average pretest scores were 61.2 while posttest scores averaged 69.0. After adjusting the posttest scores to remove pretesting influence, the Experimental 2 group posttest scores were over four points higher than either the Experimental 1 or Control groups. Significant differences in posttest scores were found at the .05 level between the Experimental 2 and Experimental 1 groups and between the Experimental 2 and Control groups. The hypothesis that this significant difference in posttest scores also existed between the Experimental 1 and Control groups was rejected.

The gain in scores between pretests and posttests was 5.4 and 6.5 for the Control and Experimental 1 groups, respectively. Experimental 2 group gain was 11.5. Again the difference between Experimental 2 and Experimental 1 was significant at the .05 level as was the difference between the Experimental 2 and the Control. This difference was not significant between the Experimental 1 and Control groups. Thus the hypothesis three was accepted while hypothesis four was rejected.

The ranking of the nine individual groups according to application of knowledge scores revealed no experimental group consistently ranking higher than the other two groups. These results inferred that the training done by a Y-K agent had little or no affect upon the members applying knowledge to actual raising of poultry.

Overall, the effect of training by a Y-K agent produced significant differences in test scores and gains in test scores, but appeared to have little or no affect upon application of knowledge.

## CHAPTER V

### SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter is a summary of the study. The purpose, hypotheses, and objectives for the study are briefly reviewed. The major findings are summarized and conclusions drawn. On the basis of the findings and conclusions, recommendations are presented. In addition, final consideration is given to areas needing additional study.

#### Summary of Study

##### Purpose

The purpose of the study was to determine any significant differences between three different methods of training Y-K members in Thailand in the area of poultry raising. The factors studied for differences were knowledge and application of knowledge.

##### Hypotheses

Four specific hypotheses were identified as being essential to the development and conduct of the study. It was hypothesized that:

1. Y-K members using a project book and attending training sessions would score higher on an achievement test in basic poultry raising concepts than members using only a project book.
2. Y-K members using only a project book would score higher on an achievement test than members neither using a project book

nor attending training sessions.

3. Y-K members using a project book and attending training sessions would show greater gains in test scores between pretest and posttest than members using only a project book.

4. Y-K members using only a project book would show greater gains in test scores between pretest and posttest than members using neither a project book nor attending training sessions.

### Objectives

Two objectives were also identified as essential to the development and conduct of the study. They state that:

1. Y-K members using a project book and attending training sessions would apply more knowledge when raising poultry than members using only a project book.

2. Y-K members using only a project book would apply more knowledge when raising poultry than members using neither a project book nor attending training sessions.

### Major Findings

The four hypotheses and two objectives formulated from the theoretical framework of the study were tested. A one-way analysis of covariance was utilized to test the first two hypotheses at the .05 level of significance and a one-way analysis of variance was run at the .05 level of significance to test hypotheses three and four. A Scheffe' test was used in each case for pairwise and multiple comparisons to determine where the significance lied. Simple ranking of the nine individual groups according to application of knowledge score was done



to test the two objectives. The major findings were as follows:

1. Y-K members averaged 17 years of age and had on the average five years of schooling and one year of Y-K membership. Two-thirds of the members were girls and two-thirds had previously raised poultry.
2. Based on the analysis of posttest performance scores among experimental groups receiving the various methods of training, a statistically significant difference was found between:
  - a. The group trained by use of a project book and training sessions in addition to hands-on experience (Experimental 2) (71.9) and the group trained by use of a project book only in addition to hands-on experience (Experimental 1) (67.5) with the former group scoring significantly higher on the posttest.
  - b. The group trained by use of a project book and training sessions in addition to hands-on experience (Experimental 2) (71.9) and the group trained through hands-on experience only (Control) (67.6) with the former group scoring significantly higher on the posttest.
3. Based on the analysis of posttest performance scores among experimental groups receiving the various methods of training, no statistically significant difference was found between the group trained by use of a project book in addition to the hands-on experience (Experimental 1) (67.5) and the group trained through hands-on experience only (Control) (67.6).

4. Based on the analysis of gains in scores between pretest and posttest among experimental groups receiving the various methods of training, a statistical significant difference was found between:
  - a. The group trained by use of a project book and training sessions in addition to hands-on experience (Experimental 2) (11.5) and the group trained by use of a project book only in addition to hands-on experience (Experimental 1) (6.2) with the former group gaining significantly more between pretest and posttest.
  - b. The group trained by use of a project book and training sessions in addition to hands-on experience (Experimental 2) (11.5) and the group trained through hands-on experience only (Control) (5.4) with the former group gaining significantly more between pretest and posttest.
5. Based on the analysis of gains in scores between pretest and posttest among experimental groups receiving the various methods of training, no statistically significant difference was found between the group trained by use of a project book in addition to the hands-on experience (Experimental 1) (6.5) and the group trained through hands-on experience only (Control) (5.4).
6. Evaluation of the application of knowledge score ranking of the nine individual groups within the three experimental groups produced no identifiable patterns. The three individual groups within any one experimental group did not consistently

rank higher than the individual groups within the other two experimental groups. In addition, none of the three group types consistently ranked higher than the other two group types.

### Conclusions

The tests analyzing the data resulted in the specific findings from which the following conclusions are drawn:

#### Conclusion 1: Knowledge

The method of training utilized in this study generally proved significant as a causal factor associated with increasing Y-K member knowledge of poultry raising. It appears that providing members with training through the use of a project book and training sessions in addition to the hands-on experience did result in a significant increase in knowledge of poultry raising. However, training the members simply by providing them with a project book in addition to the hands-on experience did not significantly increase knowledge.

#### Conclusion 2: Application of Knowledge

The method of training proved largely insignificant as a causal factor associated with increasing the amount of knowledge Y-K members apply when raising poultry. Neither of the two alternative training methods (Experimental 1 and 2) to the control produced an observable increase in application of knowledge.

### Recommendations

Based on the conclusions drawn for the study and observations of the researcher, the following recommendations are suggested in

relation to training Y-K members in Thailand.

1. The Y-K agent provide or facilitate training for Y-K members at the club level in the various project areas. This results in a personal approach to training.
2. The project books developed be used in conjunction with training sessions rather than alone. This approach may increase use of the project book because the Y-K agent can spur interest to read the book through training sessions and can incorporate the book into training sessions. According to the results of this study, this method is more effective than simply distributing the project books alone.
3. Project books be developed and printed for each Y-K project area and provided to all Y-K members in the project area. The researcher observed increased interest among the members in the experimental groups where each member received the project book. Project books can help develop and maintain interest as well as provide information.
4. Project books developed for different age groups be considered. A follow-up survey administered in four Thai provinces using the project book used in this experiment found that most members felt the book to be easy to understand. In addition, results of the survey indicated that older members used the project book less than did the younger members. Developing one project book for a group of youth ranging from 10 to 25 years of age may result in young members losing interest due to the difficulty of material in the project book and older members losing interest because of its simplicity.

5. Leader/agent guides be developed and provided to each Y-K agent and volunteer leader working with Y-K members in the project areas. These guides provide the trainers with basic information and training techniques which can be supplemented and altered to meet various situations. The researcher observed that where the poultry leader/agent guide was available, agents and leaders were more likely to carry out training sessions for Y-K members raising poultry.
6. Project subject matter should come in other forms in addition to project books and leader/agent guides. Possibilities could include a regular subject matter oriented newsletter, designed for Y-K agents and volunteer leaders.
7. Efforts need to continue to encourage the use of teaching using the methodology found in the "Working with Villagers" style that the leader/agent guide lesson plans in this study followed. Currently, the lecture method is very strong in Thailand and it may take many years to make a significant change in attitudes about teaching and learning.

#### Recommendations for Further Study

The recommendations for further study are drawn from the conclusions, theoretical framework for the study, observations, and impressions gained while conducting the study. A considerable amount of interest into the adequacy and usefulness of project books and training guides is present in Thailand as well as the United States yet little evaluation has actually been carried out. The introduction of project books and

leader/agent guides into the Thai Y-K program resulted in the current experiment. Various limitations, observations, test results, and impressions led the investigator to recommend that additional research be conducted.

The researcher recommends:

1. Research be conducted to test validity of the various instruments used to collect data in the study and to determine if they are consistent with other instruments.
2. Studies be conducted using other project areas of the Y-K program. This would include both agricultural and home economics areas. Such research would provide a broader insight into the usefulness of project books and training programs for all areas.
3. This study and/or other similar studies should be conducted in other parts of Thailand. Cultures, agriculture, customs, and language dialects vary greatly throughout the country. For example, the researcher observed in the northeastern part of Thailand Y-K agents translating the poultry project book into Lao where the youth spoke a combination of Thai and Laotian languages. Thus the results of the current study may not be applicable to all Y-K members in Thailand.
4. Continued research of the project book concept should be done. This would include measuring the amount of use the book receives and the educational value to the members. Y-K agents generally felt that the poultry project book was too simple yet the investigator had no actual evidence that this was the case. Project books of varying degrees of difficulty need to

be tested to determine at what point the Y-K members receive the maximum benefit.

5. Other training methods need to be researched. Experimenting with training programs not using the project book as well as testing such methods as individualized instruction, radio, and TV should be considered.
6. Research concerning the Y-K members' feelings toward the method of training should be conducted. Follow-up surveys after an experimental study has been completed could provide insight into what training methods the members prefer.
7. The same experiment could be conducted, only using different measuring instruments. For example, the application of knowledge score sheet used in this study indicated that the method of training had little or no affect on application of knowledge. However, a different score sheet or other measuring device could indicate otherwise.

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APPENDIX A

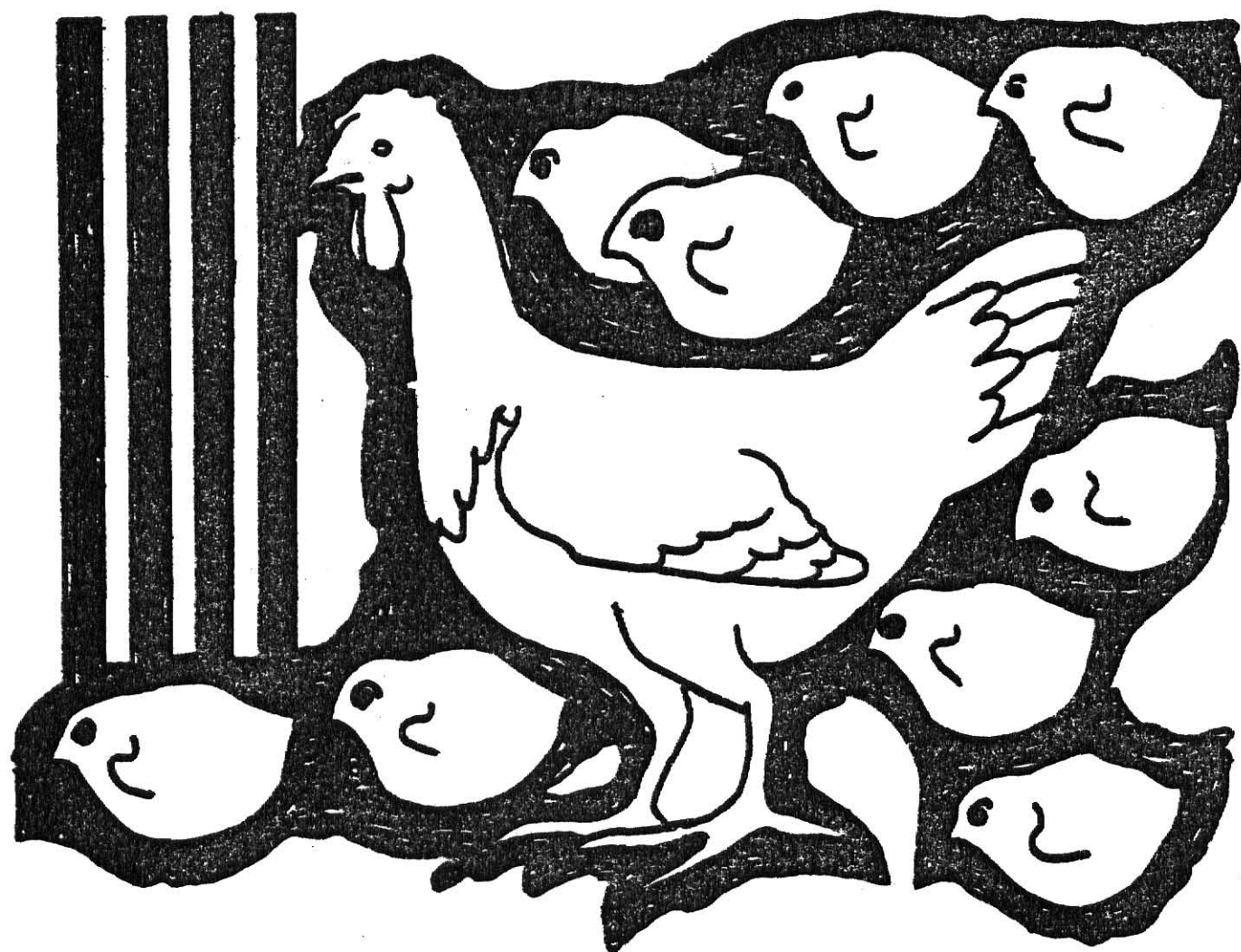
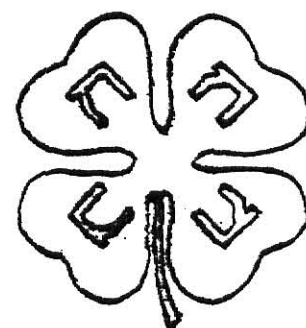
PROJECT BOOK

Dept. of Ag. Extension



# Yuwa Kasetkorn Manual

## RAISING CHICKENS



### Introduction

"Raising Chickens" has been an occupation in our homeland for a long time, whether raised freely and naturally in villages or on modern farms. No matter which method of raising is used, if the chickens are under adequate care the hopeful profit will come true. For Yuwa Kasetkorn members, training prepares them to be contact farmers in the future as well as enable them to increase income for themselves, their families, and their Y-K club.

We wish to thank Assistant Professor Dr. Suwan Kasetzuwan and Instructor Suphaporn Isariyodom of the department of animal husbandry, Faculty of Agriculture, Kasetsart University, who gave suggestions and review to this Yuwa Kasetkorn Manual. "Raising Chickens" prepared by Mr. Casey Garten and Mr. Steven Hecht, (Youth Development Project) and translated by Mrs. Vasana Srisopha, a staff member of the Y-K section.

It is hoped that this manual will be of benefit to Y-K members and others interested.

Department of Agricultural Extension  
February 1980

- What is a Chicken?	1
- Where do Chickens Live?	5
- What do Chickens Eat?	7
- Chickens Can Get Sick Too!	12
- Special Care for the Laying Flock	16
- Results of Your Work	19



### Project Requirements

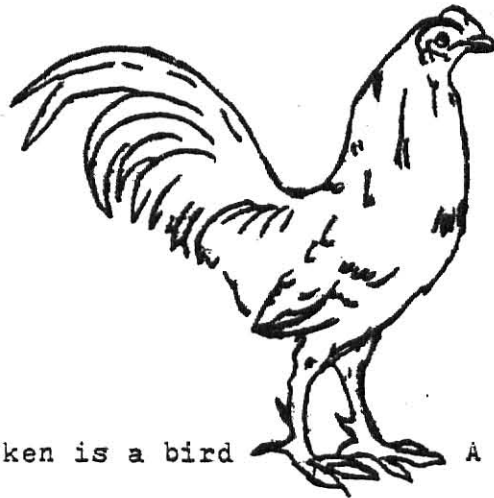
1. Participate in your Y-K club events.
2. Select a suitable chicken project and use this project book as a guide in raising them.



3. Keep accurate records in your record book.



# What is a chicken?

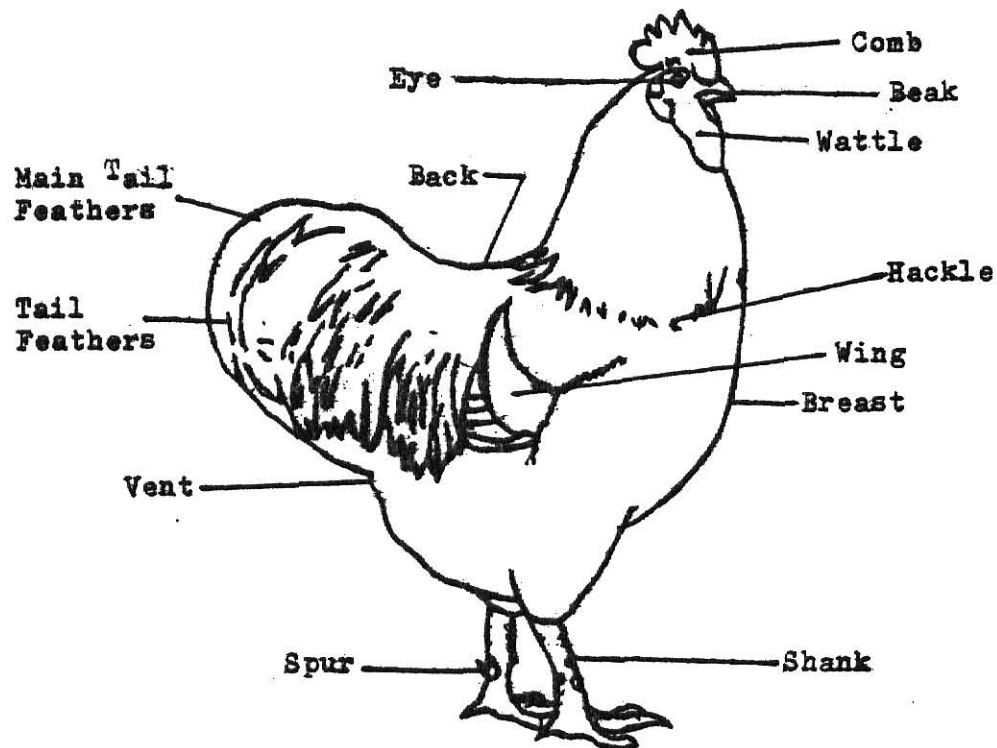


A chicken is a bird      A bird is an animal

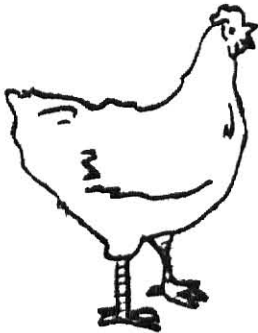
Birds differ from most other animals in the following ways:

- A bird has 2 wings and 2 legs.
- A bird has feathers instead of hair or fur.
- A bird has a beak for a mouth and no teeth.
- A bird is hatched from an egg.
- The body temperature of a bird is higher than other animals.
- Birds live shorter lives than other animals.
- Because they live shorter lives, birds breathe faster and use their food faster than animals like pigs and cattle.

Because chickens differ from other animals, certain words are used to describe their body parts. The picture below shows some of the common body parts.



Chickens are divided into 2 kinds



Laying Hen

My job is to  
lay eggs!



My job is to grow  
fast for meat!

Broiler

Laying hens are bred specifically for laying eggs. Some lay white eggs, some lay brown depending on the breed. Hens begin laying at five months of age.

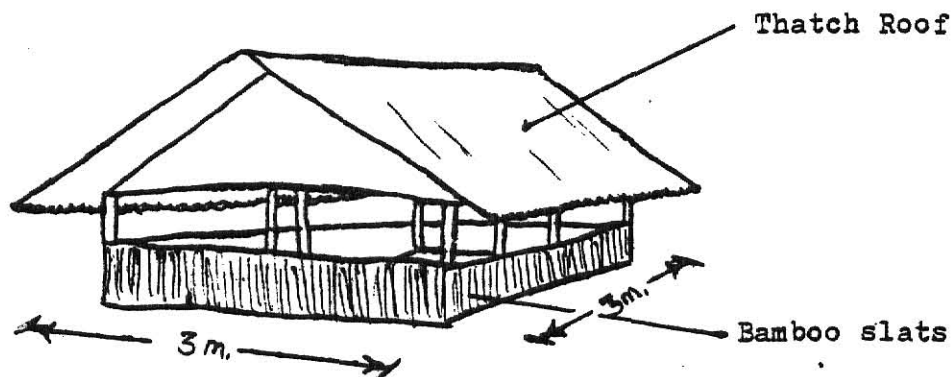
Broilers are chickens bred specifically for fast growth. They put on weight faster than other chickens that eat the same amount of feed. Broilers are ready to go to market at five to eight weeks of age.

# Where do chickens live?

Wherever chickens live, they have basic needs

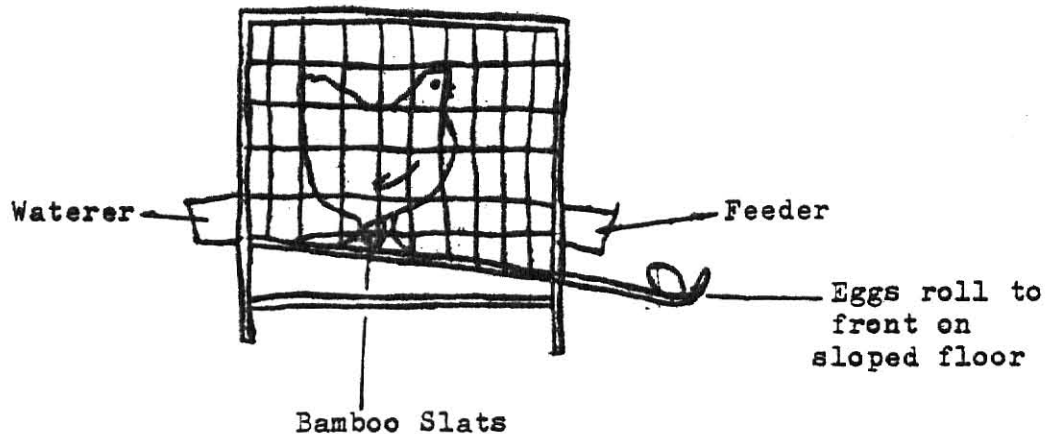
- Protection from weather and predators.
- Plenty of fresh air.
- Enough space for each bird. You can have 9 broilers or 4 laying hens for every square meter.
- Clean floor and litter. (example: straw, ect.)
- Plenty of feeders and waterers.

Let's first look at where broilers live. The picture below shows an example house for 100 broilers.



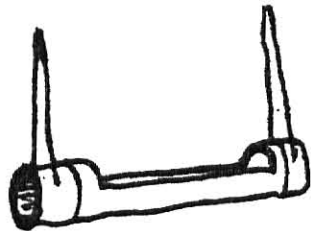
Be sure the roof extends over far enough on all sides to keep the rain out.

Houses may also be used for laying hens. They should be more protective. One way of raising a small laying flock is in cages like the one shown below.



Each cage can be built to hold about ten birds and more cages can be built as you get more birds.

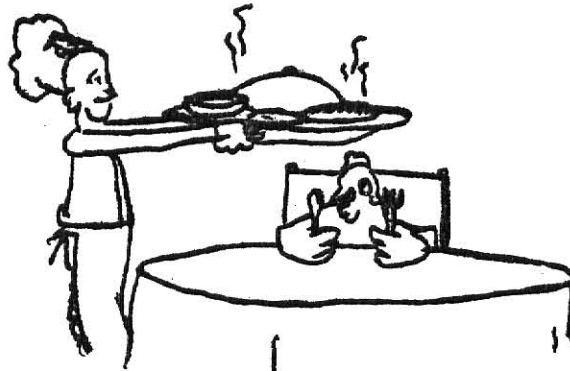
Be sure to provide plenty of feed and water. Below is an example feeder made from bamboo.



Don't fill feeders over one-half full to prevent wastage

Hang 15 centimeters above floor for adult birds

# What do chickens eat?



Feeding chickens correctly is very important. If you do a poor job of feeding them, you probably won't make any money. Some of the chickens may even die.



Rice and grass is not enough. I need more.

Chickens need a balanced diet called a ration. A good ration has six important parts. These parts and why they are needed are listed on the next page.

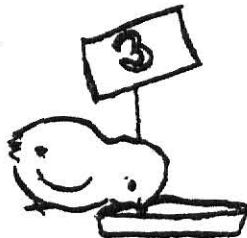
### Protein

Protein is needed for chickens to grow and help maintain their bodies. The broiler chicken needs protein to grow fast and the laying hen needs protein to produce eggs.



### Carbohydrates

These give chickens energy. If chickens do not get enough carbohydrates, they cannot grow and laying hens will not lay eggs.

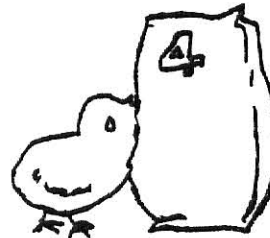


### Fats

Fats also give chickens energy and are needed in a balanced diet.

### Vitamins

These are needed to keep the chickens healthy. Without vitamins, chickens can get sick very easily.

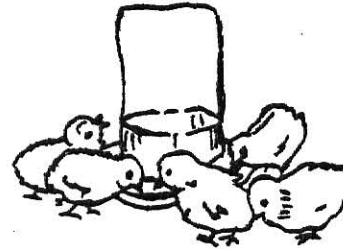




### Minerals

As chickens grow, minerals are needed to help their bones grow and stay strong.

### Water



Over half of a chicken's body is water and two-thirds of every egg is made up of water. It helps digest the food. Just as you cannot live without water, chickens also need it all the time.

These six are essential in order to raise chickens that will make you money. Rice, grass, and water cannot provide all six. Let's look at some balanced rations that will.



A commercial ration has all six parts in the right amounts. It is easy to use. Chickens fed it give the best results.

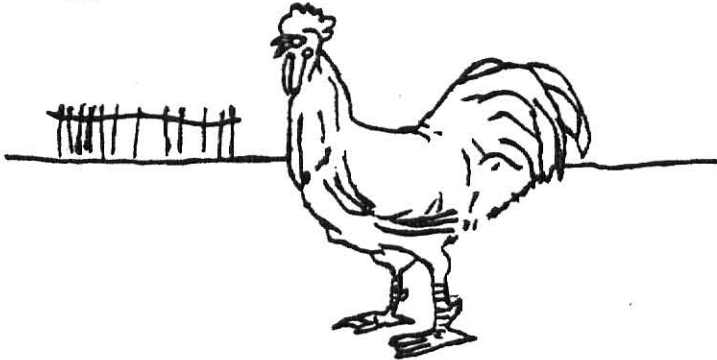


Grain

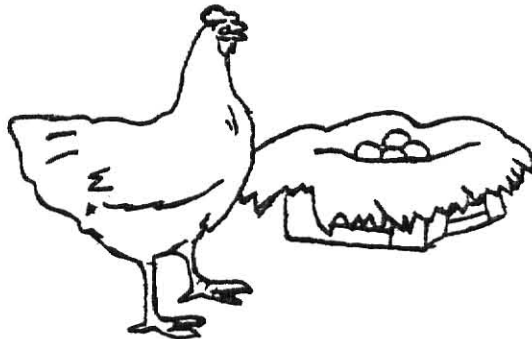


Supplement

You can also feed home grown grains. Because grain does not have enough protein and vitamins, you will need to add a supplement with these. Be sure it is fed in a feeder.



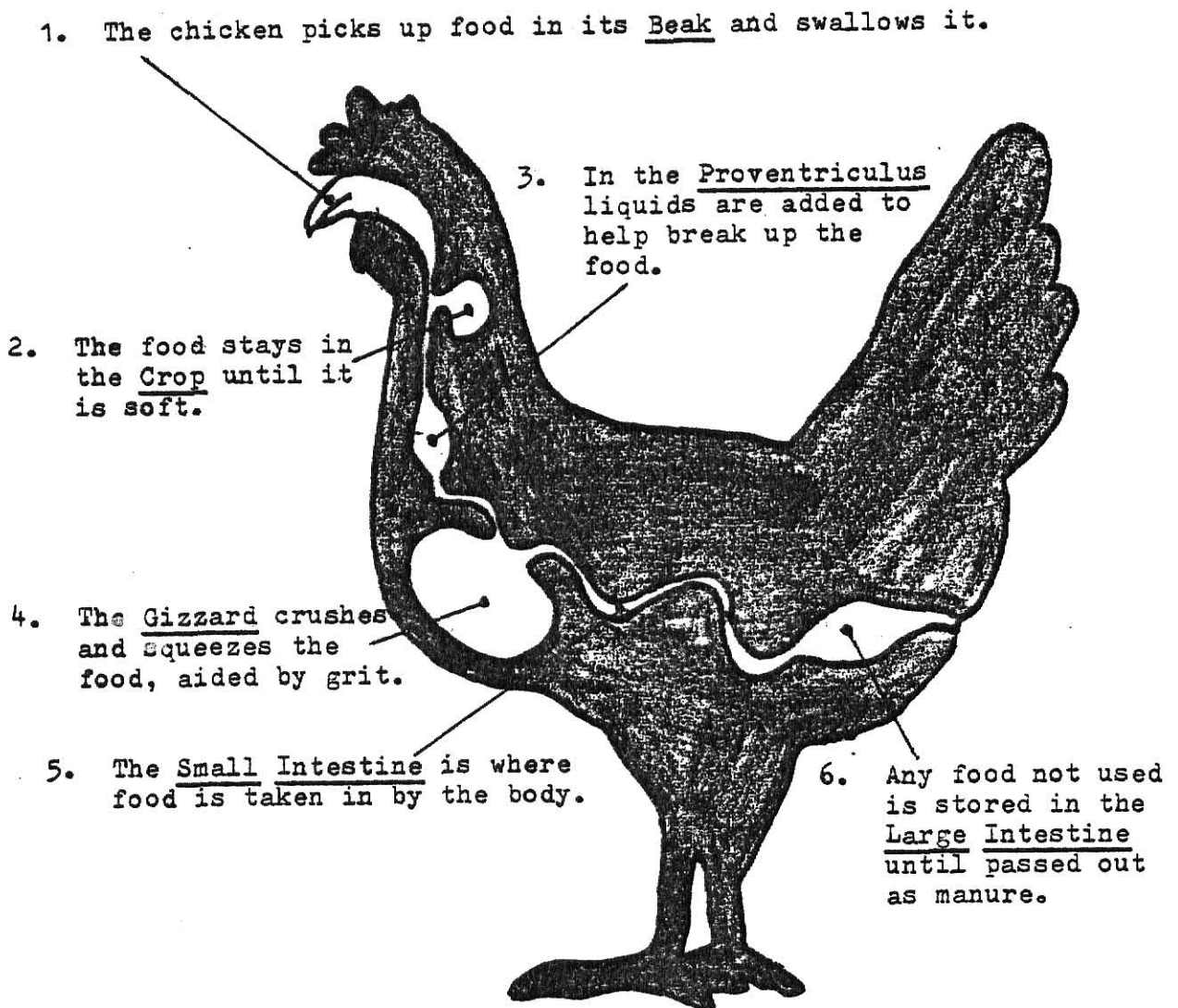
Chickens eat more feed as they grow larger. Broilers must have feed to eat all the time. During the eight weeks they are growing, each broiler will eat about 3 kg. of feed.



For laying hens during the first 20 weeks, each layer will eat about 8 kg. of feed. When they begin laying eggs, each hen may eat a little more.

Where does food go once it is eaten?

The diagram below follows food through a chicken's digestive system and explains what happens along the way.



# Chickens can get sick too

When chickens get sick, they stop growing or laying eggs and may even spread their sickness to other birds in the flock. By caring for and feeding your flock correctly, the chances of having sick birds are decreased.

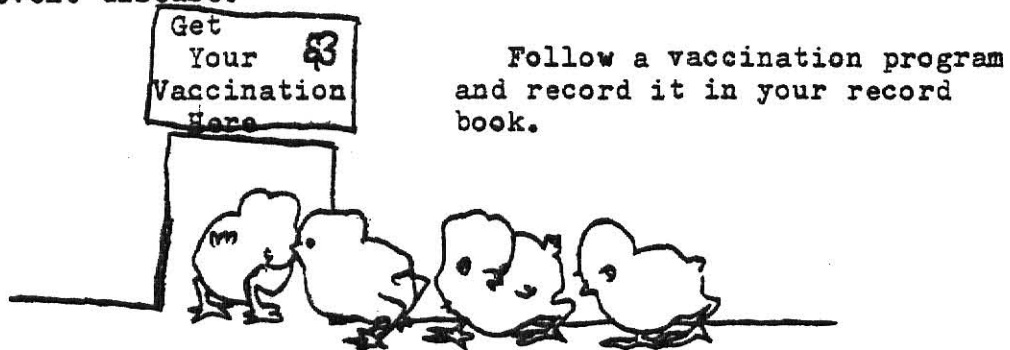
I'm not going to work today. I feel terrible!



There are two things you should do that will greatly reduce disease problems. These are Vaccination and Sanitation. First let's define what each of these mean.

## VACCINATION

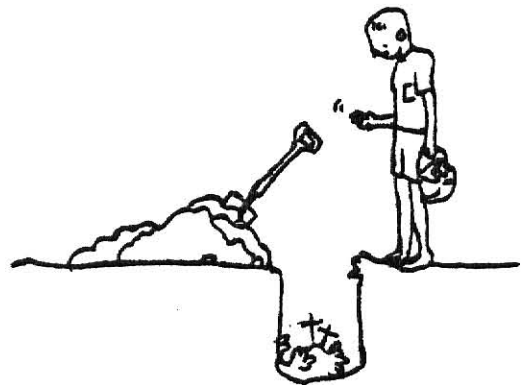
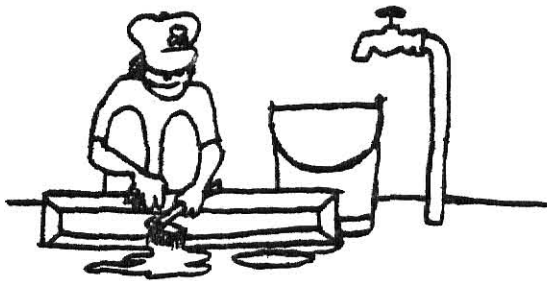
This is where you give each bird a vaccine to help prevent disease.



## SANITATION

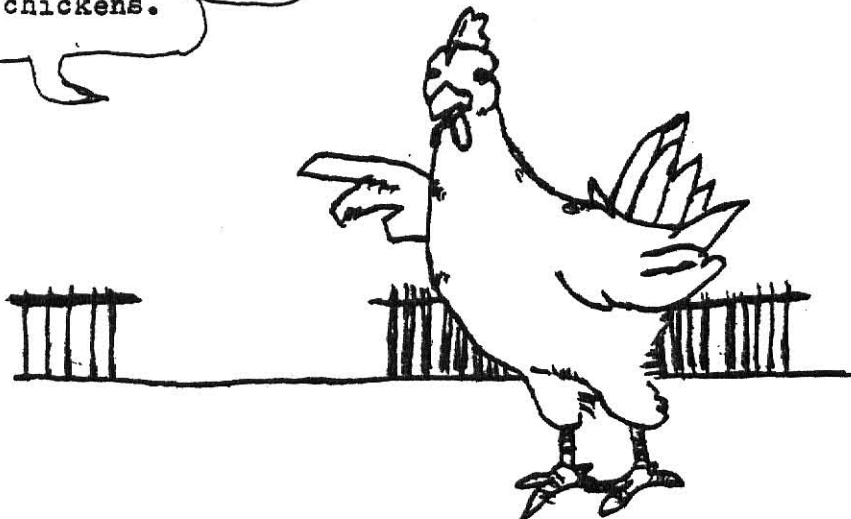
Here you do certain things to keep the birds and their home clean and healthy.

Regular washing of feeders, waterers, and other equipment is part of sanitation.



Get rid of dead birds immediately by burying or burning to prevent spread of disease.

Follow this schedule when  
raising us chickens.



### For Broilers

#### Before We Arrive:

- Clean out the house and disinfect with Lysol or Zephren.
- Make sure you have enough space for all of us.

#### The First Day:

- Vaccinate us for Newcastle and Infectious Bronchitis.
- Put an antibiotic in our water and add it again for two more days to help keep us from getting sick.
- Make sure we have plenty of feed and water.

#### Day 10:

- Vaccinate us for Fowl Pox if it's the rainy season.

#### Week 2:

- Vaccinate us again for Newcastle.
- Clip our beaks to prevent feather picking.

For Laying Hens**Before We Arrive:**

- Clean out the house or cage and disinfect with Lysol or Zephron.
- Make sure you have enough space for all of us.

**The First Day:**

- Vaccinate us for Marek's disease.
- Make sure we have plenty of feed and water.

**Day 3:**

- Vaccinate us for Newcastle and Infectious Bronchitis.

**Week 4:**

- Vaccinate us against Newcastle and Bronchitis again.

**Week 6:**

- Vaccinate us against Bronchitis.

**Week 8:**

- Vaccinate us for Fowl Pox.

**Week 10:**

- Vaccinate us for Newcastle and Bronchitis again.

**Week 16:**

- Vaccinate us for Bronchitis again.

**Week 18:**

- Vaccinate us for Newcastle and Bronchitis again.

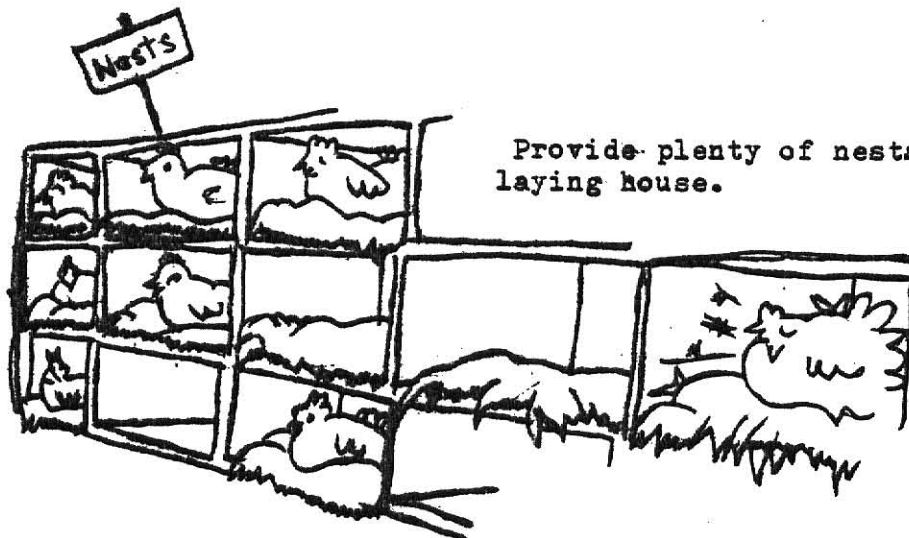
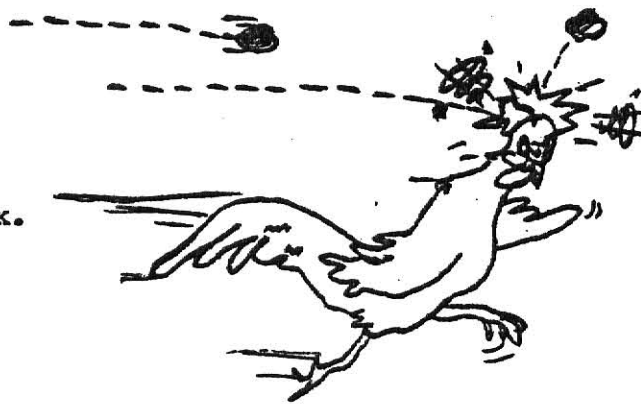
# Special care for the laying flock



I'm hungry.

Provide plenty of feed and water for the hens.

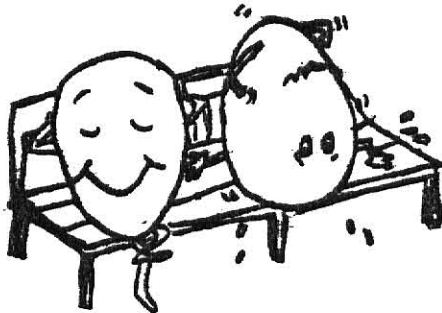
Keep roosters away from the laying hen flock.



Provide plenty of nests in a laying house.



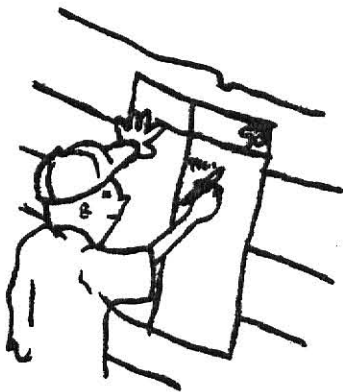
Gather the eggs at least twice a day.



Store eggs in a cool place and small end down to preserve quality.

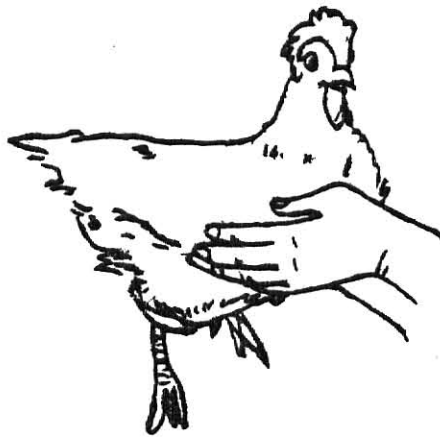
If you don't lay enough eggs, you're going to market.

Cull your flock to rid of hens that only eat and don't work.



Keep a daily egg record.

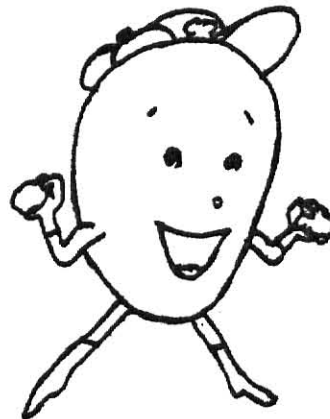
Whenever you pick up a chicken it is important to handle it with care. The drawings below show the correct way to hold a chicken.



# Results of your work

There are two products that chickens provide:

1. Eggs



I am high in protein  
and many of the vitamins.

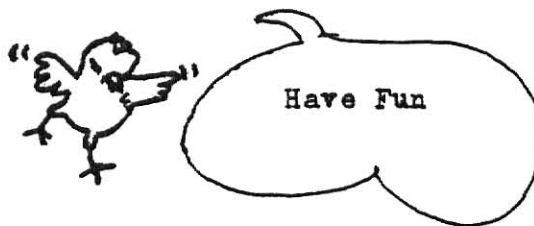
2. Meat

This barbecued chicken  
sure tastes good!

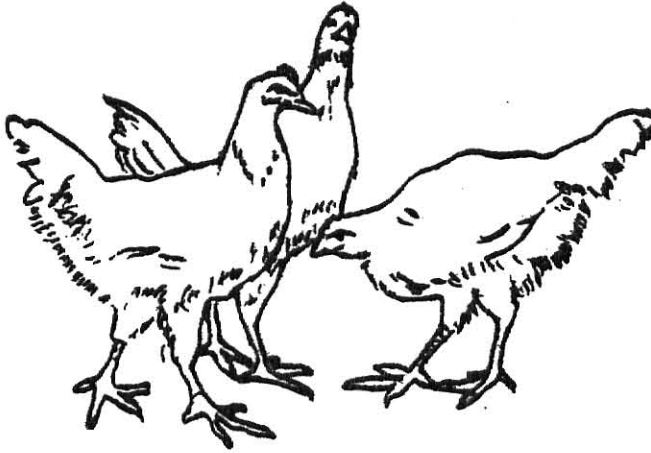


The meat from chickens is also high in protein.

Whether you use the eggs or meat at home or sell them in the market, they have a value. Record this value in your record book.



Have Fun

REMEMBER

- Select a Good Breed
- Feed a Good Feed
- Prevent Disease
- Plan Ahead for Marketing
- Learn from Experience

Head To create activity

Heart To be faithful to everyone

Hands To do good work always

Health To strengthen and honor agriculture

**Yuwa Kasetkorn Mottes**

**TO MAKE THE BEST BETTER  
LEARNING BY DOING**

**Printed by Publications Section,  
Agricultural Relations Division,  
Department of Agricultural Extension,  
Ministry of Agriculture and Cooperatives,  
First Edition 20,000 copies/1980**

## APPENDIX B

### LEADER/AGENT GUIDE LESSON PLANS

LESSON # 1	PROBLEM AREA: CHICKEN RAISING
RECORD KEEPING	

Your summary for planning this lesson

**Problem:**

This lesson helps Y-K members solve this problem:

Many times Y-K members raise animals but do not understand the economic aspects or whether or not they made a profit when sold. This is because:

- Members do not take time to keep track of their costs and income
- Present Y-K record books for raising animals are not used
- Members may not know how to keep records even if they do have a record book

**Ideas:**

Important ideas in this lesson:

1. Record keeping is important in order to determine whether one made or lost money with a project.
2. Record keeping is a valuable tool when planning for the next time one raises chickens.
3. The key to accurate records is recording the transition or activity the day it happens.
4. Taking time to record neat and readable numbers aids in accuracy.

**Objectives:**

When this lesson is over, the members should be able to:

1. Keep an accurate and neat set of records for their chicken raising project.
2. Be able to identify income and expenses.
3. Figure net profit or loss.
4. Be able to evaluate their project and plan for future projects using their records.

**Suggested Audience:**

Y-K members preparing to raise chickens



Suggested materials and supplies for this lesson:

1. Y-K animal raising record book for each member.
2. Flip chart showing enlarged record book pages.
3. Flannel Board and needed cut-outs.

#### THINGS TO DO

##### 1. To Get the Group Interested

Place on the flannel board the picture of a chicken. Tell the members the following story. A Y-K member named "Lek" raised this chicken. Lek bought this chicken when it was one-day-old and he paid 5 Baht. Lek also paid 2 Baht for vaccine for the chicken. He raised it for 60 days and feed cost 15 Baht. When sold, Lek received 30 Baht. (As you tell the story and come to each number, place that number anywhere on the flannel board.)

##### 2. To Get Discussion Going

Ask the members: "How much did Lek make when he sold his chicken?"  
(Correct answer: 8 Baht)

If the members cannot arrive at the correct answer, help them by having them tell you what the costs are. Arrange them on the left side of the chicken. (The 60 is not used because it refers to days and not to Baht.) Place the 22 under the costs to show total cost. Now ask the members how much Lek received as profit.

Once the correct answer is determined, ask the members how much money they would make if they did not know or remember some of the costs.

Point out that in order for the members to know and remember their costs so they will know how much profit they make, they should keep records. Also mention that this example was only with one chicken and they will be raising many more than one, thus having larger numbers.

Also ask the members if they can think of any other reasons why keeping records is important. Ask individual members if no one answers. The most important answer here is "For planning for next time". Records from chickens raised now will help us plan for how many we should raise next time as well as help us see areas where we can save money next time. Be sure to mention this.

##### 3. To Share Information

Hand out a record book to each Y-K member. Using the flip chart, go through the record book with the members, carefully explaining what should be written in each area. Use the example in "To get the group interested" to explain how to record costs and income in the record book. (Use 100 chickens instead of just one). Also use these figures to net profit or loss.

If the members have already begun raising chickens, guide them through recording what they should have already recorded by now.

#### 4. To Review and Sum Up

Using the flannel board, place the word "Expense" on it. Ask one member to define the term. (Answer: Money spent to buy something for the project).

Now place the word "Income" on the flannel board, and ask a member to define it. (Answer: Money received from the sale of products from the project).

Next place the word "Profit" on the board and ask a member to define it. (Answer: Money made from the project).

Ask the members how they figure profit. Arrange the board as in figure 2 and have one member come up and arrange the words properly. The correct order is shown in figure 3.

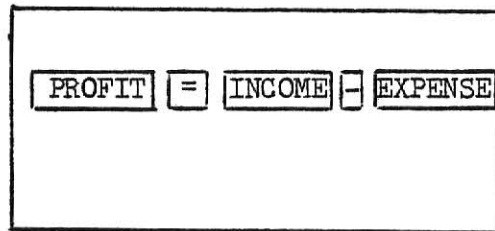


Figure 3.

Now ask the members to define the term "Loss". (Answer: Money lost from the project).

Now using the flip chart again, ask members where they would record each of the following items in their record book.

- a. Cost of 30 kg. of feed bought (Answer: Expenses)
- b. Money received from sale of 25 chickens (Answer: Income)
- c. Built a 3 meter by 3 meter chicken house on March 5, 2523 (Answer: Work Done)
- d. 100 meter of bamboo poles (Answer: Tools and materials used)
- e. Cost of 100 meters of bamboo poles (Answer: Expenses)
- f. 5 chickens died of Newcastle disease on June 9, 2523 (Answer: the day it happens)

Ask members the following questions:

- a. When should something be recorded in the record book? (Answer: the day it happens)
- b. Why is it important to keep records?

LESSON # 2	PROBLEM AREA: CHICKEN RAISING
BUILDING NEEDS	

Your summary for planning this lesson

Problem:

This lesson helps Y-K members solve this problem:

Proper shelter is essential when raising chickens. However, many members fail to provide shelter and most do not realize what types of shelter is needed.

Ideas:

Important ideas in this lesson:

1. Shelter for chickens, properly constructed, provides protection from weather and predators, as well as good feed and watering facilities.
2. Ample floor space, as well as enough feed and water space is needed for chickens to grow and produce efficiently.

Objectives:

When this lesson is over, the members should be able to:

1. Figure the needed space required to raise the number of chickens they have.
2. List the aspects of a good chicken house.
3. Construct a simple feeder or waterer.
4. List the advantages and disadvantages of raising chickens in a building or cages.
5. List the advantages of using a dry litter in the chicken house.
6. Figure water and feeder space requirements for the number of chickens they have.

Suggested Audience:

Y-K members preparing to raise chickens

Suggested materials and supplies for this lesson:

1. Flannel board.

## THINGS TO DO

### 1. To Get The Group Interested

Place on the flannel board a picture of a person. Ask the members what types of things every person needs. Expect answers such as food, clothing, shelter, etc. When the need "shelter" or "a home" is mentioned, put a picture of a house up on the flannel board.

### 2. To Get Discussion Going

Ask the members why shelter is important. Be sure to mention that protection from the weather and from robbers is mentioned. After a few minutes of discussion, remove the two pictures and put up a picture of a chicken.

Now ask the members what things a chicken needs. When the need of housing is mentioned, ask them why shelter is important for chickens. Place on the flannel board (by writing on blank cards) or on a chalkboard their answers. Be sure to include the following:

1. Protection from predators
2. Protection from the weather
3. Enough space for each bird
4. Enough feeders and waterers
5. Plenty of ventilation
6. A clean building

### 3. To Share Information

Now remove all the cards but the first one. Ask the members why it is important to have protection from predators. Ask them how one can provide protection from predators. The answer is: "To put them in a pen or cage". Mention that keeping the chickens in an enclosed area is much better than letting them run free. Other important ideas to get across here are:

- a. The shelter should be constructed so that dogs and rats cannot get in.
- b. The feed storage facility should also be so that rats cannot get to the feed.

Now remove that card and place the second one "Protection from Weather" up on the flannel board. Ask the members why protection from the weather is important. Answers should include to keep the feed and chickens dry, keep the chickens from getting sick, and to provide shade for the chickens. Mention here again that keeping chickens in an enclosed area with a roof is much better than letting the chickens run free. Other ideas to get across here are:

- a. The shelter should be located where flooding is not a problem.
- b. The roof should be good enough to keep the rain out.

Continue the process now with the third card "Enough space for each bird". It is important to provide plenty of space so as to prevent sickness, especially when the weather is hot, and to prevent cannibalism, which is increased when chickens are too close to each other in hot weather. Place on the board the space requirements needed for broilers and laying hens. The requirements are no more than 9 broilers per square meter or 4 laying hens per square meter. For 100 chickens, this is about 12 square meters needed for broilers and 25 square meters for layers.

If the members will be raising laying hens, also mention that the members will need to provide nests for the layers to lay eggs in. The guide to follow here is to have 3 community nests ( $\frac{1}{2}$  meter by 1 meter each) for every 100 chickens. If the members use the small cage with a sloped floor as shown in the project manual, no nests will be needed.

In the fourth area, "Enough feeders and waterers", mention that enough space is needed so as to prevent fighting among the birds and give all of them enough to eat. Place on the flannel board the information that 2.5 centimeters is needed for each bird for waterers and 5 centimeters is needed for each bird for feeders. Other important ideas to get across here are:

- a. The feeders and waterers should be simple, and so that the chickens cannot get into them and spill the feed and water.
- b. Keep clean water in the waterers at all times, but don't fill too full so that some of the water can spill out easily.
- c. Don't fill the feeders more than  $\frac{1}{2}$  full to prevent spilling and loosing the feed.
- d. Keep the feeders and waterers up off the floor to keep rats and dirt out.

At this time a demonstration on making a simple feeder or waterer can be done. The following steps show a possible procedure.

1. Obtain a section of bamboo.
2. Cut an opening in the top large enough so chickens can easily eat or drink out of it.
3. Hang or fasten it to a wall so as to keep it up off the floor.

When discussing the fifth area "Plenty of ventilation", stress that this is really important when the weather is hot. Chickens can die easily when they get too hot. Thus they need to be sure the chickens get plenty of fresh air and are not too crowded.

Mention that if the members do not raise the chickens in a building, they need to be sure that fresh water is always nearby in the shade. Chickens get lazy in hot weather and do not want to walk to get a drink. What happens if the water is too far away is the chickens will die for lack of water. Other ideas to bring up are:

- a. Place the building where the chickens can get plenty of fresh air.
- b. Do not completely enclose the building.

In the area of "A clean building", the main idea is that the floor needs to be kept clean. One good way to do this without a lot of work is by using litter. Litter not only reduces the number of times the building needs to be cleaned out, but also keeps the birds dry and clean. Good litter materials are: sawdust, peanut hulls, rice straw or hulls, and dry leaves. Other ideas are:

- a. About 7 centimeters of litter is needed over the whole floor.
- b. The litter should be stirred once or twice a week.
- c. Clean out the litter every two months or whenever a new set of chickens is raised in the building.

#### 4. To Review and Sum-Up

Now put up on the flannel board again all the reasons why shelter is important for chickens. Tell the members that whether they build a building or convert a building that was used for something else, these needs must be met.

Now have the members decide where they will raise the chickens, what type of shelter they will provide, and if they can use a building already present so as to save costs.

If the group is already raising chickens, have them evaluate the chicken house and decide if any improvements need to be made.

Also mention that there is one other factor when raising chickens in a building: They must feed a good balanced ration. Tell the members that at the next meeting you will talk about feeding chickens properly.

#### To Follow Up

If the group is planning to build a shelter or adapt an existing one, set up a schedule for getting materials, getting members together to help, etc.

LESSON #3	PROBLEM AREA: CHICKEN RAISING
FEEDING	

### Your Summary for Planning this Lesson

#### Problem:

This lesson helps Y-K members solve this problem:

One of the biggest problems Y-K members have when raising chickens is that the chickens are not properly fed. Many members lack the knowledge of what a good feed ration contains and how much should be fed.

#### Ideas:

Important ideas in this lesson are:

1. To expose members to correct types of feed that contain all the needed nutrients.
2. A properly balanced ration, even though initially more expensive, is actually cheaper because of the extra amount of meat and eggs produced.

#### Objectives:

When this lesson is over, the members should be able to:

1. List the 6 parts of a properly balanced ration.
2. Select a properly balanced ration for their chickens.
3. Identify the feed needs of a chick and the feed needs of an adult chicken.
4. Identify the major parts of the digestive system of a chicken.

#### Suggested Audience:

Y-K members preparing to raise chickens

#### Suggested materials and supplies for this lesson:

1. Flannel board
2. Flip chart
3. Live chicken
4. Bucket of water, box, sharp knife, newspapers, bone cutters, soap, and paper towels.
5. Feed need chart for each member.
6. Each member will need to bring his/her project book.



## THINGS TO DO

## 1. To Get the Group Interested

Using the flip chart with a page diagrammed the same as the one below, tell the members the following story:

"Lek and Poon are two Y-K members who raise chickens. Both raise broilers and expect to sell them in 8 weeks. The only difference between how they raise their chickens is that Lek feeds a ration of broken rice and grass whereas Poon feeds her chickens a complete ration she bought in the market."

"Both Lek and Poon paid 5 Baht for each of their chicks. (Write 5 Baht for each on the flip chart.) Both vaccinated for disease, which cost them 2 Baht for each chicken."

"Both made sure their chickens had plenty of feed to eat, but Lek's chickens always seemed to look underfed and didn't grow as fast or as big as Poon's chickens did. Lek estimated that his feed cost him about 8 Baht for each chicken during the 8 weeks, and Poon's feed cost her 15 Baht for each bird." (Write in the figures as you tell the story.)

"When the end of 8 weeks came, both Lek and Poon sold their broilers in the market for 17 Baht for each kilogram. Poon's broilers weighed 1.7 kg. each and Lek's only weighted about 1.2 kg. each. Thus Poon received a total of 29 Baht for each chicken and Lek received 20.5 Baht."

"As a result, Poon's net profit was 7 Baht for each chicken and Lek made 5.5 Baht for each chicken."

	<u>LEK</u>	<u>POON</u>
Feed:	Rice and Grass	Complete
	<u>Expenses</u>	
Chick:	5	5
Vaccine:	2	2
Feed:	8	15
TOTAL	15	22
	<u>Income</u>	
TOTAL:	20.5	29
PROFIT = INCOME - EXPENSES		
PROFIT:	5.5	7



## 2. To Get the Discussion Going

Ask the members what the difference is between these two member's situations. As a result of the discussion, members should realize that even though Poon had more expenses because she paid more for feed, she also made more profit. The reason for this is because the balanced ration she bought enabled her broilers to grow faster and bigger than Lek's broilers. Thus it pays to feed a good ration.

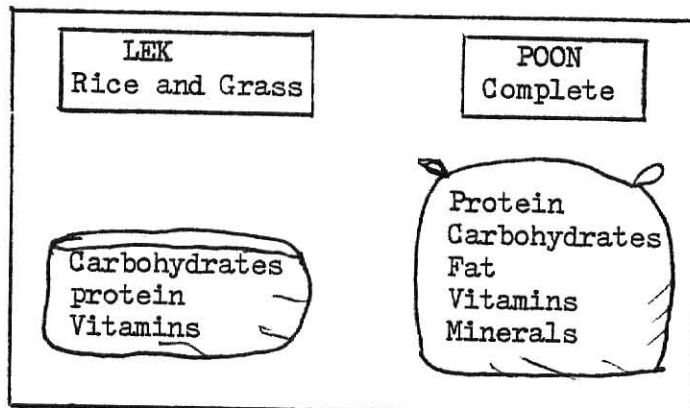
(This story can also be used when teaching Y-K members about raising laying hens. In the discussion, be sure members recognize that feeding a properly balanced ration to laying hens will enable them to lay more eggs of a better quality.)

## 3. To Share Information

On the flannel board place member's names and ration each used. Have the members turn to the pages in their project book that list the six parts of a properly balanced ration. Tell the members that these six parts are called nutrients.

Ask the members what nutrients Poon's complete ration she bought has. Once the ration is obtained that it has all the needed parts, and in the right amounts, place on the flannel board the complete feed bag with the five nutrients listed.

Now ask the members what they think Lek's ration has. The members may not know for sure, but after several guesses, place a picture of a partial feed bag on the board. Notice that the word Carbohydrates is normal size, but the words protein and vitamins are smaller. This is to emphasize that even though Lek's feed has protein and vitamins, it does not have enough for the chickens to grow effeciently. Be sure the members understand that the protein and vitamins are not enough in Lek's feed. The result is that only one nutrient is completely provided by the feed.



Ask the members how they would improve Lek's situation. Possible answers could include changing to a complete ration he either buys or makes by using his rice and grass and adding a supplement.

#### 4. To Review and Sum Up

Using the flannel board, place a flannel coated outline of a chicken on it. Have different members come up and place parts of the chicken's digestive system where they belong.

Once this is completed, ask the members what they plan to feed their chickens they will be raising or what they are currently feeding. Help them evaluate the current or planned feed to be sure it contains the needed nutrients. Also discuss feeds available to the members in your area as well as their costs.

#### To Follow Up

Visit the project sites often to check on kinds of feed used and to see if proper amounts are being fed.

LESSON # 4	PROBLEM AREA: CHICKEN RAISING
. DISEASE CONTROL - VACCINATION	

Your summary for Planning this Lesson

**Problem:**

This lesson helps Y-K members solve this problem:

A major cause of death in chickens is due to disease. One way to prevent disease is to vaccinate the chickens, but many Y-K members do not know what diseased to vaccinate for or how and when to vaccinate.

**Ideas:**

Important ideas in this lesson are:

1. Disease cannot only kill birds, but also greatly affect the performance of those that survive but are still infected.
2. Prevention is better than cure. To prevent most chicken diseases, a management schedule should be followed.

**Objectives:**

When this lesson is over, the members should be able to:

1. Identify four common diseases, list their symptoms, and methods for protection and treatment.
2. Vaccinate chicks for Newcastle and Infections Bronchitis using the nose-drop method.
3. List four vaccination tips to remember when vaccinating chickens.
4. Identify the diseases a chicken should be vaccinated against, as well as when and how they should be vaccinated.

**Suggested Audience:**

Y-K members preparing to raise chickens.

**Suggested materials and supplies for this lesson:**

1. Flannel Board

2. Pictures of chickens with the following diseases:
  - a. Newcastle Disease
  - b. Infectious Bronchitis
  - c. Fowl Pox
  - d. Marek's
3. Two or three day-old chicks and empty bottle of Newcastle/Bronchitis vaccine.
4. Flip Chart

#### THINGS TO DO

##### 1. To Get The Group Interested

Using the flannel board, place pictures of four diseased chickens on it. Ask the members what they think is wrong with these chickens.

##### 2. To Get Discussion Going

Now ask the members if they have ever had or seen chickens that look like those pictured on the flannel board. Ask them how they can prevent these diseases, Vaccination and Sanitation are the answers, and tell the members that today you will be concerned with vaccination.

##### 3. To Share Information

Now ask the members if they can identify the diseases that each of the four chickens on the board have. Under each picture place the name of the disease as it is identified or as you identify it. As you identify each disease, explain the cause, how to prevent it, how you identify the disease if their chickens get it (symptoms), and how to treat the infected chickens. Use the following information as a guide:

###### a. Newcastle Disease

- 1) How the chickens can get it: from wild birds or carried from one farm to another on people's clothes, tools, etc.
- 2) How to prevent the disease: vaccinate by the nose-drop method.
- 3) How to identify the disease if chickens get it:
  - chicks cough, gasp, are uncoordinated, and up to 90% of the chicks in the flock can die.
  - adult chickens cough, are nervous, and egg production in layers drops to zero.
- 4) How to treat infected birds: separate infected (sick) chickens from the rest of the flock and put an antibiotic in the drinking water of all the chickens (both sick chickens and those not sick). Vaccinate all unaffected chickens.

## b. Infectious Bronchitis

- 1) How the chickens can get it: from a virus. Transmitted to other birds through the air when a sick bird sneezes.
- 2) How to prevent the disease: vaccinate by the nose-drop method.
- 3) How to identify the disease if the chickens get it:
  - chicks cough, sneeze, and egg production in layers can drop 10-50%.
  - chicks cough, sneeze, have watery eyes and nasal discharge, and up to 60% of the chicks can die.
- 4) How to treat infected chickens: separate infected (sick) chickens from the rest of the flock and put an antibiotic in the drinking water of all the chickens.

The demonstration of using the nose drop method to vaccinate chicks against Newcastle Disease and Infectious Bronchitis can be done now.

## c. Fowl Pox

- 1) How the chickens can get it: from a virus that birds, flies, and mosquitoes can carry.
- 2) How to prevent the disease: vaccinate using the wing web method. Place picture of this method on the flannel board and demonstrate if possible with a live bird.
- 3) How to identify the disease if the chickens get it: the chickens will eat very little feed, a discharge will come from the eyes and nostrils, and a cheesy membrane will be present in the mouth. Egg production will drop if the chickens are layers.
- 4) How to treat infected chickens: separate infected (sick) old chickens from the rest of the flock and remove cheesy membrane from the mouths of the sick chickens. Also put an antibiotic in the drinking water of all the chickens. Vaccinate all unaffected chickens.

## d. Marek's Disease

- 1) How the chickens can get it: from a virus and is carried by the air.
- 2) How to prevent the disease: vaccinate one-day old chicks if the disease is common in the area. Clean and disinfect the chicken house before putting new chickens in, and keep new birds away from other ones.
- 3) How to identify the disease if the chickens get it: chicks are affected the most and they lose weight, parts of their body become paralyzed, and they may become blind in one or both eyes.
- 4) How to treat infected chickens: separate sick chickens from the rest of the flock and put an antibiotic in the drinking water of all the chickens.

Now have the members turn to the management schedule in their project book and have the members discuss when they should vaccinate for the diseases.

There are several things the members should remember when they vaccinate their chickens. Call these "Vaccination Tips" and list them on the flip chart.

- a. Vaccinate all the birds at one time.
- b. Check to see what diseases are common in the area and be sure to vaccinate for them.
- c. Do not vaccinate birds that are sick. Chickens will react to vaccines for a couple of days after being vaccinated, and this reaction can cause an already sick bird to become even more sick.
- d. Do not "stretch" vaccines by giving the chickens less vaccine than they are supposed to get so as to vaccinate more chickens. Follow the manufactures recommendations.
- e. Put an antibiotic in the drinking water for the first 3 days after vaccinating birds and for the first 3 days the chickens are on the farm.

#### 4. To Review and Sum Up

Ask the members why it is important to vaccinate. The answer is "to prevent disease". Also be sure to include the fact that every time a chicken dies, the member loses money.

Once again have the members identify the diseases pictured on the flannel board. Ask them how to prevent each disease, how to identify if their chickens have it, and how to treat the sick birds.

Also review the vaccination tips with the mebers.

#### To Follow Up

Remind all members to record all vaccinations and costs in the record book. Also tell the members that the day the chicks arrive, you will come to help the members vaccinate the chicks.

LESSON # 5	PROBLEM AREA: CHICKEN RAISING
DISEASE CONTROL - SANITATION	

Your summary for Planning this Lesson

**Problem:**

This lesson helps Y-K members solve this problem:

Vaccination is needed to prevent disease, but sanitation is also needed. Some diseases have no vaccine that will prevent them, so sanitation is important. Many Y-K members do not know what sanitation measures need to be taken to help prevent diseases.

**Ideas:**

Important ideas in this lesson are:

1. Members need to understand that they cannot rely only on vaccination to prevent disease, but that sanitation is also important.
2. A recommended management schedule should be followed when raising chickens. The schedule in the project book has both vaccination and sanitation measures that should be followed.

**Objectives:**

When this lesson is over, the members should be able to:

1. Describe what to do with a sick chicken and what to do with a dead chicken.
2. List five sanitation tips when raising chickens.
3. Debeak a chicken properly.
4. Follow the management schedule in their project book to know what sanitation measures they need to take and when.

**Suggested Audience:**

Y-K members preparing to raise chickens.

**Suggested materials and supplies for this lesson:**

1. Flannel Board

## THINGS TO DO

### 1. To Get The Group Interested

Put a picture of an unclean person on the flannel board. Ask the members what they think of when they look at the picture. Some may say that the person is poor, has poor health habits, ect. Steer the discussion so that they recognize the person practices poor sanitation.

### 2. To Get Discussion Going

Ask the members what type of a house this person would live in and if they feel this person would be more likely to get sick than most other people.

Next put a picture of a chicken on the flannel board next to the person. Mention that chickens are like people in that if they are dirty and live in dirty houses, there is a better chance of them getting sick. Keeping chickens and their homes clean is Sanitation.

### 3. To Share Information

Have the members turn to the management schedule in their project book. Using it as a guide for the basic sanitation and vaccination procedures that need to be done, review it with the Y-K members.

Using lesson #2, "Building Needs", review with the members the information contained in "To Share Information" in that lesson. Emphasize that providing protection from predators and weather, keeping feeders and waterers clean and off the ground, providing ample space and nests, and keeping the whole area clean and ventilated are all essential parts of sanitation.

Also remind the members that the four diseases you discussed in lesson #4, "Vaccination", may also be caused by poor sanitation. One additional sickness should be mentioned here and it is Coccidiosis. Share the following information on Coccidiosis with the group, and put a picture of a sick, droopy chicken on the flannel board.

#### a. Coccidiosis

- 1) How the chickens get it: by raising them where the ground or litter is wet and the weather is warm.
- 2) How to prevent the disease: Keep the building and area dry.
- 3) How to identify the disease if chickens get it: the chickens look droopy, eat very little feed, and have bloody droppings and diarrhea, and egg production in layers drops.
- 4) How to treat infected chickens: separate sick chickens from the rest of the flock and feed Amprolium or similar drug to the chickens.



When you come to the recommendations of debeaking in the project book, demonstrate the process on a live chicken (14 days old). Place a picture of a properly debeaked bird on the flannel board to help you explain the process. Ask the members why this process is done. The correct answer is "to prevent feather picking that can lead to infection and even death." Have the members do the debeaking if they can on the live bird. Also mention that debeaking helps prevent cannibalism.

Now that you've told the members some methods to prevent disease and sickness by sanitation, ask the members what they would do if they saw that some of their chickens were sick. The correct answer is to remove the sick chickens from the flock and put an antibiotic in their drinking water as well as put an antibiotic in the drinking water of those birds not sick but which were exposed to the sick ones.

Next have the members assume that one of the sick chickens die. Ask them what they should do with the dead chicken. The correct answer is to either burn or bury it to prevent further disease in the rest of the flock.

#### 4. To Review and Sum Up

List on a flip chart "Sanitation Tips" and ask the members what sanitation measures they should take. Some to include are:

- a. Keep the house dry and cool with good ventilation.
- b. Keep rats and dogs and other predators out of the chicken house.
- c. Disinfect the chicken house, feeders, and waterers before bringing in a new flock of chickens.
- d. Debeak to prevent feather picking and cannibalism.
- e. Keep chicks away from older birds for four to six weeks.
- f. Bury or burn dead chickens as soon as possible.

#### To Follow Up

Inform the members that you will visit them to observe their project and help them improve.

APPENDIX C

ACHIEVEMENT TEST

## CHICKEN RAISING TEST

## Instructions:

The following statements are either true or false. Read each statement. If you think a statement is true, circle T. If you think a statement is false, circle F.

- T F 1. Chickens do not have teeth.
- T F 2. Chickens live longer than water buffalo.
- T F 3. Roosters can lay eggs.
- T F 4. Eggs hatch 5 days after they are laid.
- T F 5. All breeds of laying hens lay brown colored eggs.
- T F 6. Roosters should be kept from the laying hen flock if the eggs will be sold in the market.
- T F 7. Laying hens begin laying eggs when 3 months old.
- T F 8. Fertile eggs will be fresh longer than infertile eggs.
- T F 9. If litter in the chicken house gets wet, chances for disease increases.
- T F 10. The value of eggs and chicken meat from a Y-K project that is used at home should be recorded in the record book.
- T F 11. Net Loss is better than Net Profit.
- T F 12. When raising chickens, it is a good idea to completely enclose the building so no air can blow through it.
- T F 13. It is a good idea to keep feeders and waterers up off the floor.
- T F 14. A group of laying hens will lay more eggs when all together in one large pen than when divided into several smaller pens.
- T F 15. There should be enough feeders and waterers so that all the chickens can eat and drink at the same time.
- T F 16. The chicken house should be cleaned out about once every 3 years.
- T F 17. 350 laying hens can be raised in a 3 meter by 3 meter chicken house.

- T F 18. Rice, grass, and water can provide all the nutrients a chicken needs.
- T F 19. Food stays in the crop of a chicken's digestive system until the food becomes hard.
- T F 20. A balanced ration enables chickens to grow faster.
- T F 21. A balanced ration enables laying hens to lay fewer eggs.
- T F 22. Both carbohydrates and fats can give chickens energy.
- T F 23. Regular washing of feeders and waterers is part of vaccination.
- T F 24. Young chicks should be kept away from older chickens.
- T F 25. If a laying hen gets Fowl Pox, her egg production will decrease.
- T F 26. Feeding chickens stale feed that is decomposing can cause many of the chickens to die.
- T F 27. The first time chicks should be vaccinated against Newcastle disease is when they are 2 weeks old.
- T F 28. A laying hen is a male chicken.
- T F 29. Chickens need to be vaccinated against any disease that is common in the area.
- T F 30. If a chicken has Newcastle Disease, it should be vaccinated with Newcastle vaccine.
- T F 31. If chickens are vaccinated against Newcastle disease today, they may look sick for the next few days because they are reacting to the vaccine.
- T F 32. On a very hot day, chickens may not walk to water if it is too far away.
- T F 33. On a hot day, chickens should drink hot water, so leave the water set in the sun.
- T F 34. The chicken house should be cleaned out before new groups of chickens are brought in.

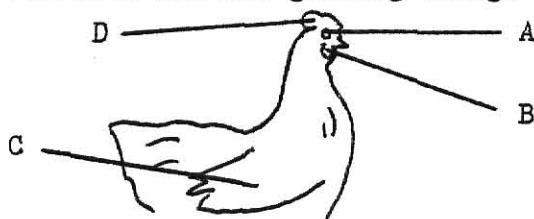
Instructions:

For each of the following questions, circle the letter in front of the correct answer. There is only one correct answer, so circle only one letter.

35. Marek's disease mostly affects chickens at what age?
- a. as chicks
  - b. at 4 months of age
  - c. at 5 months of age
  - d. at one year of age

36. How old are laying hens before they lay their first eggs?
- a. 10 months
  - b. 1 year
  - c. at 40 days
  - d. 5 months
37. How does the body temperature of a chicken compare to the body temperature of a water buffalo?
- a. it is higher
  - b. it is lower
  - c. it is the same
  - d. it is one-half as much
38. What covers the chicken's body?
- a. fur
  - b. feathers
  - c. hair
  - d. clothes
39. What is a broiler chicken?
- a. a male chicken over one year old
  - b. a young chicken raised for meat
  - c. a duck that is one year old
  - d. a female chicken that lays eggs
40. What is a laying hen?
- a. a female chicken that lays eggs
  - b. a chicken that crows every morning
  - c. a castrated male chicken
  - d. a chicken grown only for meat
41. Under proper heat and humidity, how long will it take before a fertile egg will hatch?
- a. 10 days
  - b. 21 days
  - c. 5 days
  - d. 1 month
42. After eggs are gathered from the chicken, in what position should they be placed?
- a. on their side
  - b. small end down
  - c. large end down
  - d. in any position
43. What are the two main products chickens provide?
- a. meat and eggs
  - b. feathers and meat
  - c. eggs and bones
  - d. milk and eggs

44. What is the correct way to hold a chicken?
- both hands around its body
  - around the neck
  - one hand holding each wing
  - one hand under the chicken's body
45. Which of the following materials would not make a good litter to use on the floor of a chicken house?
- sawdust
  - dry leaves
  - tree branches
  - rice hulls
46. What is the best thing to do with a laying hen that has been culled?
- keep it around as a pet
  - put it back in the flock
  - sell it in the market
  - feed it to the dogs
47. When do laying hens lay the greatest number of eggs?
- The first full year of laying
  - the second full year of laying
  - the third full year of laying
  - the first 5 months of life
48. How often should eggs be collected?
- twice a week
  - three times a week
  - once a week
  - twice a day
49. Suppose one day you went to help a friend feed his chickens. About 3 days later you notice that your chickens have Newcastle disease. What most likely caused the disease?
- the chickens' immunity to Newcastle disease ran out, so they automatically got the disease
  - the feed the chickens eat is stale
  - your friend's chickens had Newcastle disease and you brought the virus home on your clothes and transmitted it to your chickens.
  - the chickens are not getting enough water



Using the picture above, identify the body parts that the letters point to.

50. What body part does letter "A" point to?
- ear
  - eye
  - beak
  - wattle

51. What body part does letter "B" point to?
  - a. comb
  - b. spur
  - c. wattle
  - d. head
52. What body part does letter "C" point to?
  - a. wing
  - b. vent
  - c. spur
  - d. breast
53. What body part does letter "D" point to?
  - a. shanks
  - b. keel bones
  - c. spurs
  - d. comb
54. Which of the following is not an expense when raising chickens?
  - a. feed bought
  - b. day-old chicks bought
  - c. eggs sold
  - d. cost of the building
55. Which of the following is considered income?
  - a. money paid for feed
  - b. money borrowed from a bank
  - c. day-old chicks given free
  - d. money received when chickens are sold
56. How is profit determined?
  - a.  $\text{income} + \text{expenses}$
  - b.  $\text{income} - \text{expenses}$
  - c.  $\text{expenses} - \text{income}$
  - d.  $\text{expenses} + \text{income}$
57. Money paid for 30 kilograms of feed is considered what?
  - a. income
  - b. work done
  - c. expense
  - d. tools used
58. If 100 chickens are sold for 30 Bht each, where would it be recorded in the record book?
  - a. income
  - b. expenses
  - c. work done
  - d. problems encountered

59. What is expense?
- a. money lost on the project
  - b. money received when selling products
  - c. the opposite of profit
  - d. money spent to buy something for the project
60. What is income?
- a. money lost on the project
  - b. money received when selling products
  - c. the opposite of profit
  - d. money spent to buy something for the project
61. Records on a chicken raising project should be kept for several reasons. Which of the following is not a reason for keeping records?
- a. to help plan for the next time chickens are raised
  - b. to be able to figure net profit
  - c. to determine whether or not a profit is made
  - d. to please the Y-K agent

Lek raised 100 broiler chickens for 8 weeks. He paid 5 Bht for each chick and 2 Bht for vaccine for each. Chicken feed cost him a total of 15 Bht for each chicken. After 8 weeks, Lek sold the chickens for 30 Bht each.

62. How much is Lek's total expenses for each bird?
- a. 22 Bht
  - b. 30 Bht
  - c. 2200 Bht
  - d. 8 Bht
63. How much is Lek's net profit for each bird?
- a. 30 Bht
  - b. 800 Bht
  - c. 22 Bht
  - d. 8 Bht
64. How much is Lek's total net profit for the 100 broilers?
- a. 3000 Bht
  - b. 800 Bht
  - c. 2200 Bht
  - d. 8 Bht
65. How long should one wait before letting chicks mix with older chickens?
- a. 4-6 weeks
  - b. 5 days
  - c. 1 year
  - d. 10 days



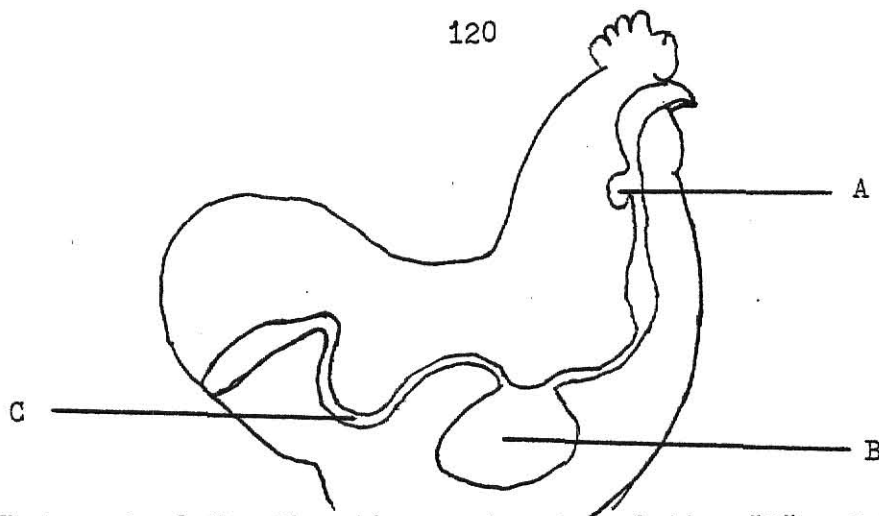
66. What is the maximum number of laying hens that can be raised in one square meter of space?
- a. 4
  - b. 9
  - c. 20
  - d. 50
67. A small cage with a sloping floor is usually used when raising what?
- a. broiler chickens
  - b. baby chickens
  - c. laying chickens
  - d. roosters
68. How full should a feeder be filled with feed?
- a. as full as possible
  - b. one centimeter deep
  - c. to the top
  - d. one-half full
69. What is the maximum number of broilers that can be raised in a pen that measures 3 meters by 3 meters?
- a. 254
  - b. 144
  - c. 200
  - d. 9
70. What is the maximum number of laying hens that can be raised in a pen that measures 3 meters by 3 meters?
- a. 25
  - b. 4
  - c. 9
  - d. 36
71. Where should a chicken house be located?
- a. where the chickens cannot get fresh air
  - b. where there is no shade
  - c. where flooding is not a problem
  - d. at least 25 kilometers from home
72. If litter is used on the floor of a chicken house, how deep should it be?
- a. 7 centimeters
  - b. 1 meter
  - c. 50 centimeters
  - d. 75 centimeters
73. How can chickens get coccidiosis disease?
- a. by not feeding them
  - b. by raising them in a building that has a wet floor or wet litter
  - c. by not debeaking them
  - d. by not getting enough sleep

74. Why are feeders often hung up off the floor?
- a. to give chickens something to stand on
  - b. to help prevent feed wastage
  - c. to make it easier for the chickens to eat
  - d. to make it easier to fill the feeders
75. Suppose you are raising 100 chickens. About how many centimeters of feeder space do you need for the 100 chickens?
- a. 2.5 centimeters
  - b. enough for one-half of the flock to eat at one time
  - c. 500 centimeters
  - d. 2500 centimeters
76. A balanced ration for chickens contains how many nutrients?
- a. 4
  - b. 2
  - c. 6
  - d. 20
77. Which of the following nutrients is most important to keep chickens healthy?
- a. vitamins
  - b. water
  - c. fats
  - d. salt
78. Which of the following nutrients gives chickens energy?
- a. water
  - b. carbohydrates
  - c. minerals
  - d. vitamins
79. Which of the following nutrients is most important in helping the bones of the chicken grow?
- a. water
  - b. carbohydrates
  - c. vitamins
  - d. minerals
80. How much of a chicken's body is made up of water?
- a. 95 percent
  - b. over 50 percent
  - c. 85 percent
  - d. 20 percent
81. How much of a chicken egg is made up of water?
- a. two-thirds
  - b. 50 percent
  - c. 100 percent
  - d. 20 percent

82. Which of the following chickens would eat the most amount of feed?
- day-old chick
  - one week old chicken
  - an adult chicken
  - a dead chicken
83. Once food is swallowed by a chicken, where is the first place it goes?
- small intestine
  - mouth crop
  - gizzard
  - head
84. Food is crused and squeezed in what part of the chicken's body?
- gizzard
  - mouth
  - crop
  - large intestine
85. Which of the following rations would most likely be balanced with all 6 nutrients?
- rice hulls, grass and water
  - broken rice and water
  - broken corn, rice and water
  - broken rice, water, and a supplement with extra protein, vitamins and minerals
86. If a broiler chicken is raised for 8 weeks, it will eat about how much feed?
- 3 kilos.
  - 8 kilos.
  - 1 kilo.
  - 10 kilos.
87. During the first 5 months before a laying hen begins laying eggs, how much feed will she eat?
- 3 kilos.
  - 8 kilos.
  - 20 kilos.
  - 2 kilos.

Using the picture on the next page, identify the parts of the chicken's digestive system that the letters point to.

88. What part of the digestive system does letter "A" point to?
- proventriculus
  - beak
  - crop
  - shank



89. What part of the digestive system does letter "B" point to?
- spur
  - gizzard
  - small intestine
  - proventriculus
90. What part of the digestive system does letter "C" point to?
- small intestine
  - beak
  - comb
  - proventriculus
91. What is the process called where each chicken is given a vaccine to help prevent disease?
- castration
  - vaccination
  - sanitation
  - feeding
92. Keeping the chickens house clean, dry and well ventilated is known as what?
- vaccination
  - castration
  - sanitation
  - feeding
93. What should be done with a chicken that has died because of a disease?
- it should be buried or burned
  - it should be fed to the dogs
  - it should be prepared for eating
  - it should be sold in the market
94. What is debeaking?
- cutting off the lower beak of the chicken
  - cutting off the whole beak of the chicken
  - cutting off one-half of the whole beak of the chicken
  - cutting off one-half of the upper beak of the chicken

95. Why is debeaking done?
- a. to help the chickens eat
  - b. to prevent feather picking in the chicken flock
  - c. to make the chickens look pretty
  - d. to keep the beak from getting too long
96. What disease of diseases should a 1-3 day old chick be vaccinated against?
- a. nothing
  - b. Small Pox and Tuberculosis
  - c. Newcastle Disease and Infectious Bronchitis
  - d. Fowl Pox
97. What should be done with a sick chicken?
- a. it should be separated from the rest of the flock
  - b. it should be fed to the dogs
  - c. it should be left with the flock
  - d. it should be given any vaccine that is available
98. Which of the following is not a good sanitation tip to follow?
- a. keep the chicken house dry and cool with good ventilation
  - b. keep rats and dogs and other predators out of the chicken house
  - c. disinfect the chicken house, feeders, and waterers after bringing in a new flock of chickens
  - d. bury or burn dead chickens as soon as possible
99. Suppose you are raising a flock of chickens and they are one week old. When you go to look at them you find several dead, others coughing and gasping for air, and even some that stagger and cannot walk straight. Which disease do you think they have?
- a. Fowl Pox
  - b. Small Pox
  - c. Tuberculosis
  - d. Newcastle disease
100. When vaccinating chickens against a disease, which of the following practices should be followed?
- a. All the chickens should be vaccinated at the same time
  - b. One-half of the chicken flock should be vaccinated and observed for three days. If they do not get sick, the other half can then be vaccinated
  - c. Vaccinate one-half of the chicken flock. This is enough to prevent the disease
  - d. Vaccinate one-fourth of the chicken flock. This is enough to prevent the disease

APPENDIX D

SCORE SHEET

SCORE SHEET

## Y-K Chicken Raising Project Evaluation

Evaluate the following aspects of the chicken raising project and circle the number rating you feel is appropriate.

<u>Shelter</u>		<u>Poor</u>				<u>Good</u>
a.	Provides protection from weather	1	2	3	4	5
b.	Provides protection from predators	1	2	3	4	5
c.	Sanitation of the building and area	1	2	3	4	5
d.	Location of shelter (near shade, no flooding, etc)	1	2	3	4	5
e.	Ventilation adequate	1	2	3	4	5
<u>Coop Condition</u>						
a.	Ample Floor Space (at least 3m.X3m. for 100 broilers)	1	2	3	4	5
b.	Litter clean and well stirred	1	2	3	4	5
<u>Isolation</u>						
a.	Chickens kept separate from other chickens and birds	1	2	3	4	5
<u>Drinking Water</u>						
a.	Drinking water is clear, clean, cool, and not blackish	1	2	3	4	5
<u>Feed and Water Equipment</u>						
a.	Ample number of feeders and waterers	1	2	3	4	5
b.	Height of feeders and waterers	1	2	3	4	5
c.	Plenty of feed and water available	1	2	3	4	5
d.	No wastage of feed or water	1	2	3	4	5
e.	Feeders and waterers are clean and sanitary	1	2	3	4	5
<u>Feed Storage</u>						
a.	Feed protected from predators and weather	1	2	3	4	5
<u>Record Book</u>						
a.	Up-to-date, clean, neat, and accurate	1	2	3	4	5
<u>Record Book after Project is Completed</u>						
a.	Record book completed	1	2	3	4	5
b.	Record book neat and readable	1	2	3	4	5
c.	Income and expense figures accurate	1	2	3	4	5
d.	Net Profit or Loss calculated correctly	1	2	3	4	5

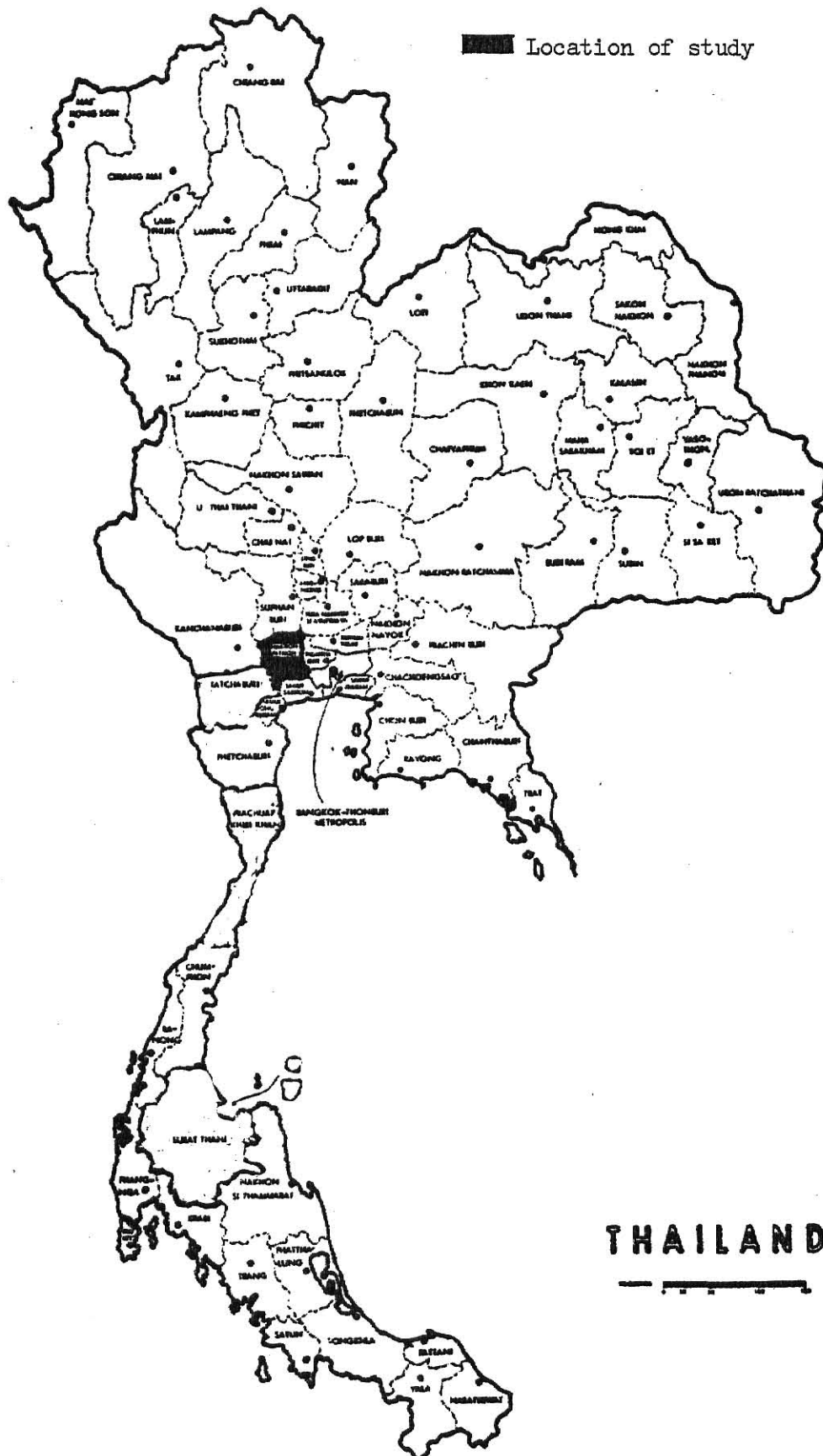
Total Possible Score = 100

APPENDIX E

MAP OF THAILAND



**Location of study**



APPENDIX F

COOPERATING UNIVERSITY INSTRUCTORS

Assistance was provided by the following two men during the development of the instructional unit materials as well as the instruments used in gathering data:

1. Dr. Suwan Kasetsuwan, assistant professor of animal husbandry,  
Faculty of Agriculture, Kasetsart University, Bangkok, THAILAND
2. Suphaporn Isariyodom, instructor of animal husbandry, Faculty of  
Agriculture, Kasetsart University, Bangkok, THAILAND

APPENDIX G

MEMBER INFORMATION SHEETS



## MEMBER INFORMATION SHEET-CONTINUED

Part E

Have you ever raised ducks before? \_\_\_\_yes \_\_\_\_no  
Have you ever judged poultry in a judging contest? \_\_\_\_yes \_\_\_\_no  
Have you ever worked on a poultry farm? \_\_\_\_yes \_\_\_\_no  
Have you ever participated in the Y-K Occupational Development Project  
and trained on a poultry farm? \_\_\_\_yes \_\_\_\_no  
Has the Y-K agent, Home Economics agent, or anyone else ever taught  
chicken raising at a Y-K meeting you attended? \_\_\_\_yes \_\_\_\_no

MEMBER INFORMATION SHEET  
(Post Test)

Part A

Club Name \_\_\_\_\_  
Village \_\_\_\_\_ District \_\_\_\_\_  
Province \_\_\_\_\_

Part B

How far from the site where your club raised chickens do you live?  
(please circle)

- a. less than  $\frac{1}{2}$  kilometer
- b.  $\frac{1}{2}$  to 1 kilometer
- c. 1 to 2 kilometers
- d. more than 2 kilometers

COMPARISON STUDY OF METHODS OF TRAINING THAI YOUNG FARMERS  
IN POULTRY RAISING

by

CASEY DWIGHT GARTEN

B. S., Kansas State University, 1978

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AN ABSTRACT OF A THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

College of Education

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1981



### Statement of the Problem

This study sought to determine the relationship between three different methods of providing training in poultry raising to Thai young farmers. Comparisons were made on differences in knowledge acquired by the young farmers and the application of knowledge by the young farmers to actual poultry raising.

### Method

The population consisted of members of the Thai young farmer organization, Yuwa Kasetkorn (Y-K). The sample taken was comprised of 96 Y-K members in nine individual Y-K groups within one of Thailand's seventy-two provinces.

A non-equivalent control group experimental design was used with intact Y-K groups randomly assigned to treatment groups. One treatment group was designated the control. A second group trained through the use of a project book while the third treatment group trained through the use of a project book and training sessions.

Scores from a pretest-posttest achievement test in poultry raising were compared for differences between groups and differences in gains in scores between pretest and posttest. Differences between scores received by each individual Y-K group on application of knowledge was also compared. Each Y-K member also completed member information sheets before taking the pretest and posttest.

A one-way analysis of covariance was used to test for differences in the independent variable (training method) as it influenced the dependent variable knowledge. In addition, the one-way analysis of

variance tested for differences in gains between pretest and posttest scores resulting from the different training methods. A Scheffe' test made pairwise and multiple comparisons between test groups to determine where significance at the .05 level of probability was evident.

The influence of training method upon the dependent variable application of knowledge was determined by ranking the nine individual Y-K groups according to scores each received. No statistical test was found to effectively compare the nine group scores.

### Results

Comparisons between groups on the adjusted posttest scores and comparisons on the gains in scores showed no significant differences between the test group trained using a project book and the control. Significant differences were found between the group trained using a project book and training sessions and the control as well as between the group trained using a project book and training sessions and the group using only a project book.

No significant differences were apparent between any of the test groups on application of knowledge as evidenced by the ranking of each group according to the score it received.

### Conclusions

Two major conclusions were drawn as a result of the findings. The first conclusion was that the method of training involving both a project book and training sessions proved significant as a causal factor with increasing Y-K member knowledge of poultry raising as compared to the other two training methods.

The second conclusion drawn was that the method of training proved largely insignificant as a causal factor of increasing the amount of knowledge Y-K members apply when raising poultry.