The Social Sciences 5 (3): 224-227, 2010
ISSN: 1818-5800

The Efficiency and Effectiveness of an Innovation Model Appropriate for Disseminating Knowledge of Correcting Salty Soil Conditions in Northeast Thailand

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Abstract: This research aimed to examine and evaluate efficiency of a model of disseminating knowledge of correcting salty soil conditions in northeast Thailand. The sample consisted of 40 farmers at Ban Du Yai and Ban Knam Rian, Tambon Mueang Phia, Amphoe Bab Phai, Khon kaen Province, obtained using the purposive sampling technique according to the established requirements for selecting farmers. The instruments used in this research were a test of knowledge and understanding of salty soil problems and correcting salty soil conditions, a scale on attitude toward correcting salty soil and an interview form on salty soil condition correcting behavior. The collected data were analyzed using basic statistics, E_1/E_2, E.I. and t-test (dependent samples). The research results revealed that the model of disseminating knowledge of correcting salty soil conditions in northeast Thailand had an efficiency (E_1/E_2) of 82.75/83.00 and an Effectiveness Index (E.I.) of 0.6909. The farmers participating in the project for dissemination inereased their knowledge and understanding of correcting salty soil conditions, positive attitudes toward correcting salty soils and correcting salty soil condition behavior after dissemination at 0.05.

Key words: Efficiency of the model, disseminating innovation, salty soil, farmers, Thailand

INTRODUCTION

One important problem of disseminating innovations or technology to farmers for developing or correcting salty soil area conditions is something difficult to do, particularly an innovation or technology strange and new to the way of life of farmers. Most of the causes are that farmers in rural communities have low level of education. This can cause them to have perspectives and concepts which are barriers and to uphold more traditional culture and beliefs than scientific data which are really logical and provable. Therefore, the researcher implemented the model of disseminating knowledge of correcting to the principle of dissemination and the theory of disseminating innovation of Rogers (2003) in the process of disseminating knowledge of correcting salty soil conditions. They had effects on adiusting farmers concept to have knowledge and understanding and to realize the importance of solving problems of salty soils and the impacts to emerge from the problems of extending salty soil areas.

For the model of disseminating knowledge of correcting salty soil conditions, after having been considered by experts, it was necessary to have testing or tryout in real situations before using the model for dissemination according to the principle of the process of research and development to find out the efficiency and effectiveness index of the developed model by using an evaluation instrument (Hoksuwan, 2005). Thus, the researcher was interested in conducting this study. The results of the study will allow us to know a guideline for correcting salty soil condition more efficiently.

Purposes: To evaluate the efficiency of the model of disseminating knowledge of correcting salty soil conditions by measuring knowledge, attitudes and farmer's behaviors in correcting salty soil conditions.

MATERIALS AND METHODS

The research design is research and development. Data were collected from July 2008-2009 in Tambon Mueang Phia, Amphoe Ban Phai, Khon Kaen Province. The sample consisted of 40 farmers at Ban Du Yai and Ban Kham Rian, purposively selected from those participating in the project using the criteria for consideration of selecting farmers with the following qualifications:

- Being farmers whose farming areas face piroblems of salty soil conditions from low to high level of saltiness (2-15 dS m^{-1}) and higher
- Being farmers who earn chief living by farming and live permanently in the salty soil area

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- Being able to participate and perform activities in the project for disseminating knowledge of correcting salty soil condition throughout the project

Data collection has the following stages:

- Before operating data collection, the researcher asked for permission for conducting research and data collection from farmers to participate in the project and from community leaders
- Making plans for data collection by making appointments wish the farmers participating in the project to participate in activities by notifying through the village broadcasting tower and community leaders
- Explaining the details and collecting data using a test of knowledge and understanding, a scale on attitude and an interview form with interviewing by the researcher herself and an assistant researcher

Data analysis has the following stages:

- Primary data analysis using mean and standard deviation
- Data analysis for comparing dissemination outcomes between before and after operation using t-test

RESULTS

The research results revealed that the developed model of disseminating knowledge of correcting salty soil conditions in northeast Thailand had an efficiency of 82.75/83.00 which was in conformity with the established requirement of 80/80 and an effectiveness index of 0.6909. For the results of analyzing the testing of knowledge and understanding, it was found that the farmers participating in the project after operation increased their knowledge and understanding of salty soil problems and correcting salty soil condition from before operation at the 0.05 level of statistical significance. They increased their positive attitudes toward correcting salty soil conditions at the 0.05 level of statistical significance and increased their behaviors in correcting salty soil conditions in their own farming areas at the 0.05 level of statistical significance.

DISCUSSION

The research results revealed that the model of disseminating knowledge of correcting salty soil condition in northeast Thailand had an efficiency of 82.75/83.00 and an effectiveness index of 0.6909 and after dissemination the farmers increased their knowledge from before dissemination at the 0.05 level of statistical significance. These results are in accordance with Suwitthayaphan (2004), who studied the use of Calorie model of health evaluation of ability to evaluate nurses family health. It was found that after the experiment the ability increased from before the experiment at the 0.05 level of statistical significance. This is in accordance with the results of the research conducted by Kiatnatthakon (2004), who developed a training course in Labor Force Protection Act for Labor Force Union committee. He found that learning achievement of trainess increased at the 0.05 level of statistical significance. The results of this research are also in congruence with the results of the research by Biaochan (2007) who examined an evaluation of the project for natural agriculture training. He found that the farmers increased their knowledge of natural agriculture from before training at the 0.05 level of statistical significance. Therefore, the emerging knowledge and understanding must necessarily rely on studying, learning and perceiving from a variety of learning resources including person media, mass media, printed matter media, activity media and action using the process of integrated knowledge dissemination. The results of analyzing farmers' attitudes toward correcting salty soils revealed that most of the farmers participating in project for disseminating knowledge of correcting salty soil condition in northeast Thailand were female, aged 51-60 years (80%) were married (82.5%) completed primary education (87.5%) and earned an average monthly income of <1,000 baht (42.5%), increased their positive attitudes toward correcting salty soil conditions at the 0.05 level of statistical significance with $\bar{X}$ = 4.79. When each item was considered, it was found that their attitudes were at a strongly agree level in every item. They were in this order from the highest to the lowest mean:

- The project for disseminating knowledge can generate more participation in perceiving problems and methods of solving problems of salty soils together with neighbors ($\bar{X}$ = 4.95)
- Provision of knowledge of correcting salty soil conditions continuously and thoroughly can build motivation for correcting salty soils ($\bar{X}$ = 4.90)
- Real practice can help build understanding of correcting salty soils ($\bar{X}$ = 4.87)

These are in conformity with the established hypotheses. The results of this research are also in accordance with the research conducted by Phengnu (2002), who studied the process of community power participation for enhaneing mental health at Ban Tha Muang, Amphoe Phunphin, Surat Thani Province. She

found that participation could occur when community people gave the importance to the real problems and needs on the basis of community's needs with common feelings in demonstrating responsibility together. It is in congruence with the study conducted by Phimkhot (2006) who studied the factors involving acceptance of technology for producing toxin-free vegetables by farmers in Udon Thani province. She found that the farmers were persuaded by neighbors to be group member. This is in congruence with the results of the study by Houle (2008) who studied acceptance of instructional innovation of the community college and found that important factors included person, teaching method and organizational system using group participation through reasonable thinking, group discourse and discussion. Therefore, the process of participation is the best instrument for mobilizing labor and spirit of social power and cooperatively disseminating knowledge in continuity and thoroughly. It is the factor to build motivation and perception for the focused group to be more interested and aware of the problems.

For the results of analyzing farmer's behaviors in correcting salty soil conditions, it was found that the farmers in creased their behaviors in correcting salty soil conditions at the 0.05 level of statistical significance. Most of the farmers solved the problems of salty soils and revitalized the conditions of salty soils in their own farming areas at a medium level ($\bar{X}$ = 1.58). When each one was considered, their behaviors were found to be at medium and low level in this order from the highest to the lowest mean: the farmers participated in the campaigning activities for correcting salty soil conditions ($\bar{X}$ = 2.30). They put rice husk, manure and fermented fertilizers on their rice farms ($\bar{X}$ = 1.90). And they prepared big holes for planting saltiness-proof plan-ts using manure together with rice husk or other materials to cover plant/tree boles after planting ($\bar{X}$ = 1.80). The results of this research are in congruence with Thawikul (2007) who studied acceptance of organic rice of farmers and dissemination of the appropriate method of organic rice production. He found that the factors affecting acceptance of the farmers in organic rice production were: in the physical aspect including convenience in traveling; in the economic aspect including organic rice being easy to sell and having markets to underlie; in the health aspect including having safe organic rice for consumption; in the biological aspect including organic rice farms being natural food source and in the production factor aspect including organic rice seeds being easy to find. These are in congruence with the study findings of Johnson (2008), who found that acceptance of recommendations for organization of meat production business as goods consisted of quantity of work, income for living and size and system of classifying production. They are also in accordance with Russell (2008) who studied acceptance of technology of administrators and officials within the university system and found that the benefit to receive was solving problems of institution work performance in the projects from new knowledge of technology to living and originating adoption of the knowledge for more performance in educational institutions.

CONCLUSION

The factors affecting acceptance and unacceptance of innovations or technology for utilization are various, particularly economic and social factors. For disseminating innovations or technology, it is necessary to regard these factors in order to be motivation or factors enhancing acceptance of more innovations and technology.

RECOMMENDATIONS

Recommendations for agencies and practitioners and for further research:

- Knowledge dissemination in the community facing problems of salty soils should be operated using the process of participation of all sectors. Also, an emphasis should be on having community people be core leaders of dissemination and operation of performance in continuity
- The media used for disseminating knowledge should be adjusted to the community's way of life and culture
- Organization of activities can very well build motivations for participation of community people
- The length of time for operating dissemination should be at least 1 month for development to knowledge, memory, understanding and action

Efficiency of disseminating knowledge of correcting salty soil conditions should be evaluated in continuity to examine knowledge, attitudes and performance behaviors which affect changes in each period of time such as 6 months and 1-3 years, respectively.

ACKNOWLEDGEMENT

My sincere thanks go to all farmers participating in the project and to the annual research support fund 2009 as well as every instructor for providing knowledge and advice.

REFERENCES

Biaochan, C., 2007. Evaluation of the project for natural agriculture training at wat yanasangvaram varamahavihara center for agricultural career training and development based on Royal initiation. M.Sc. Thesis, Mahasarakham University, Mahasarakham.

Hoksuwan, S., 2005. Educational innovation dissemination. Maha Sarakham: Department of Educational Technology and Media, Faculty of Education, Mahasarakham University, pp: 30.

Houle, L., 2008. Adoption of a Technology/Pedagogical Innovation by a University Teaching Community. University de Sherbrooke, Canada, ISBN: 9780 494379783, pp: 8.

Johnson, R., 2008. Adoption of recommended management practices in stocker cattle production. M.S. Thesis, Oklahoma State University, Oklahoma.

Kiatnatthakon, C., 2004. Developing a program for training on work force protection act for work force union board members Bangkok. Master Thesis, Burapha University.

Phengnu, U., 2002. The process of participation of community power for enhancing mental health at ban tha mueang, amphoe phunphin, changwat surat thani. M.Sc. Thesis, Kasetsat University, Bangkok.

Phimkhot, N., 2006. The factors involving acceptance of toxin-free vegetable production technology of farmers in changwat udon thani. M.Sc. Thesis, Sukhothai Thammathirat Open University, Nonthaburi.

Rogers, E.M., 2003. Model of the Diffusion of Innovation Theory. Free Press of Glencoe, New York, pp: 30.

Russell, M.L., 2008. Exploring Cchief Information Officer Perceptions of Information Technology Innovation Adoption within a University System. George Washington University, Washington, DC.

Suwitthayaphan, O., 2004. The effects of using calgary's health evaluation from on ability to evaluate nurses family health. Master Thesis, Burapha University, Chon Buri.

Thawikul, K., 2007. A study of acceptance of organic rice production of farmers and dissemination of an appropriate method of organic rice production. M.Sc. Thesis, Khon Kaen University, Khon Kaen.