

A PRELIMINARY ASSESSMENT ON THE PROGRAM “SEA URCHIN RESOURCE MANAGEMENT (SURE MGT.) THROUGH CAGE CULTURE TECHNOLOGY” OF THE UNIVERSITY OF NORTHERN PHILIPPINES

Jessy C. Domingo
University of Northern Philippines
UNESCO Heritage City of Vigan

Miriam N. Javier
University of Northern Philippines
UNESCO Heritage City of Vigan

Maritess R. Raboy
University of Northern Philippines
UNESCO Heritage City of Vigan
tess31782@yahoo.com
09052142319

ABSTRACT

This study aimed to assess the socio-economic aspect of SURE Management Program of the University of Northern Philippines in two coastal communities in Ilocos Sur. This program has been conceptualized as a result of the various R&D programs of UNP on sea urchin cage culture technology as a resource management tool. The program was initially implemented in Nalvo, Sta. Maria, Ilocos Sur in 2009, where an association of sea urchin growers, the Maritangtang Resource Recovery Implementers' of Nalvo (MARRIAN,Inc.), was organized and registered to SEC by UNP. Its expansion in Santiago, Ilocos Sur was started in 2014.

This assessment has been delimited to the determination of the perception of the respondents on the contribution of the project in terms of the socio-economic status of the project recipients as well as their assessment and satisfaction rating in the implementation of the program.

The fisherfolks who were recipients of trainings, material inputs, technical and/or financial assistance of the project were the respondents in this study. Majority of the respondents are recipients of trainings and technical assistance. Fifteen (15) serve as co-operators and ten (10) already serve as partner-trainer of UNP.

In terms of increase in income from sea urchin farming, data showed that 45% had very much (Php7,001 and above), 38% had much (Php4,001-7,000), and 17% had moderate increase (Php1,001-4,000) in income.

In terms of the trainings conducted, most of the trained fisherfolks gave a very satisfactory rating to the trainers, training objectives, activities conducted, and training materials used, with an overall rating of very satisfactory. After the training, with the initial assistance provided by the university, majority of the trainees have engaged themselves into cage culture of sea urchin as their additional source of income.

In terms of assistance provided, most of the respondents were recipients of technical assistance and material inputs, who gave an overall rating of very satisfactory on the implementation of the program. The co-operators and other trained fisherfolks were the recipients of the material inputs. The co-operators, who serve as caretakers and managers of the cage culture are being provided with the cage materials and sea urchin juveniles while the co-operators provide the manpower and security. With regards to sharing of income, the net proceeds (per production cycle) of the project is 2:1 UNP and the co-operator.

With the assessment rating of the respondents on the implementation of the project, especially in Nalvo, Sta. Maria, Ilocos Sur, it can be concluded that SURE Mgt. through Cage Culture is a sustainable program towards resource conservation as well as income generation. It is therefore recommended that this program be sustained and strengthened through its expansion to other coastal communities in the province.

Keywords: sea urchin, cage culture, assessment, co-operators, fisherfolks

Introduction

The University of Northern Philippines has developed numerous breakthroughs to reach the Ilocanos in the parlance of Northern Luzon context. One of the efforts of UNP is the scheme on aquaculture incubation project. Among these UNP's ventures on incubation projects is the SURE Management (Sea Urchin Resource Mgt.) through cage culture technology.

This program has been conceptualized as a result of the various R&D programs of UNP on sea urchin (*Tripneustes gratilla*) cage culture technology. Its initial implementation was on 2009 in Nalvo, Sta. Maria, Ilocos Sur wherein a number of fisherfolks who are engaged in the cage culture of sea urchin (locally known as *maritangtang*) were organized and registered to SEC. Its

expansion in San Roque, Santiago, Ilocos Sur started in 2014.

The main principle of SURE Mgt. include the recovery and restoration of the sea urchin resource through cage culture technology, wherein the concept of grow-out culture serves as an artificial way of reproduction of sea urchin in their natural habitat (Corrales, et.al, 2007). Moreover, SURE Management aims to provide a sustainable, small scale source of income to fisherfolks. Thus, UNP has been providing trainings, technical assistance, and material inputs to the stakeholders.

The program is an integrated component of the integrated aquaculture project of the University of Northern Philippines. In the project framework (see figure 2), the support system or inputs such as budget, equipment, materials, and its

linkages with partner agencies such as LGUs, BFAR, and DOST-PCAARRD strengthen the implementation of the activities or project strategies. Through community organizing, conduct of trainings and seminars, and provision of material inputs to the clientele, the program is directed towards livelihood development as an immediate outcome, providing increased income of the recipients, and eventually contribute to economic resiliency as the long term outcome or ultimate goal of the program.

Inasmuch as the university aims to provide more efficient extension service to its clientele and partners, this study has been conducted to assess the socio-economic aspect of the SURE Mgt. Program. The perception of the respondents on the projects' impact on the respondents will serve as a basis of UNP in the sustainability and improvement of its partnership to the stakeholders.

Objectives

This study mainly focused on the assessment of the UNP's SURE Management Program by the program's partners and clientele.

It particularly aimed to:

1. Identify the profile of the respondents/program clientele in terms of gender, civil status, educational attainment, and source of income;
2. Determine the involvement of the respondents to the program;
3. Assess the contribution of SURE Management in the increase in income of the respondents; and
4. Determine the perception of the respondents on the SURE Mgt. Program in terms of satisfaction rating.

REVIEW OF RELATED LITERATURE

In Ilocos Sur, grow-out culture of sea urchin has become a popular aquaculture venture in some coastal communities (Corrales and Tuban, 2008). According to Juinio-Menez, et.al (2008), grow-out culture of sea urchin in cages was developed as a means to enhance the recovery of depleted natural populations and to provide a supplemental source of income to fisherfolks.

The most commercially exploited sea urchin species in the country is *Tripneustes gratilla*, locally known as maritangtang in Iloko. Its fishery is now considered a major source of livelihood in many coastal villages including Nalvo, where maritangtang is a local delicacy (Corrales, et.al,2007).

In 2006, Seguisundo and Navarro conducted a study on the socio-economic profile of the sea urchin fishermen in Nalvo, Sta. Maria, Ilocos Sur. Results of the study showed that majority (82.1%) of the respondents had estimated income of Php1,000-3,000 while 17.9% had estimated income of 3,000 and above. It was concluded that sea urchin farming can uplift the economic condition of the sea urchin fishermen.

The University of Northern Philippines together with the community was able to sustain the health of the coastal area of Nalvo, Sta. Maria, Ilocos Sur by introducing back two of the most diverse natural resources namely: the sea urchin and sea cucumber through its aquatic resource recovery projects (Corrales, et.al, 2007).

Muraoka, in his paper 'Managing the Sea Urchin Fishery: an Economic Perspective', he made a brief historical sketch of the development of the sea urchin fishery in the

United States. In this study, suggestions on protective measures for sea urchin fishery management were consolidated that include: prohibition on harvesting young urchins, limit on the number of divers, a fishing season for urchins, closure of fishery areas, and increase in the sea urchin landing tax.

A similar study on sea urchin management in Bolinao was conducted McManus, et. al. In this study, three intervention measures were recommended: the imposition of annual closed collecting season, the restriction of harvestable size to no less than 6cm, and the design of a marine reserve, within which natural sea urchin populations may flourish to replenish depleted fishing grounds.

Corrales, et.al. (2009) developed a learning module entitled: Module on Sea Urchin Resource Management (SURE Management): Grow-out Culture of Sea Urchin (*Tripneustes gratilla*) in cages. This module deals with the concepts, principles, and operation of sea urchin grow-out culture in cages, with a discussion on the importance of grow-out culture as a resource management tool and source of livelihood. In this module, Corrales,et.al (2009) stated that the SURE Management Project aims to provide a sustainable, small-scale source of livelihood to fisherfolks and at the same time involving them in coastal resource management.

As mentioned by Figuerres (2011), Sanders (1996) and Song (1981) as cited by Contaio (2003) disclosed that extension activities have high potential for

contributing quickly and substantially to local and national development. Contaio (2003), as stated by Figuerres, (2011) determined the effectiveness of the UNP Extension programs by analyzing the relationship between administrative capability and level of program outputs in terms of skills training, information drive, medical-dental mission, and livelihood organizations. Among the salient findings of his study include: only a few clientele have employed using the skills they learned; and skills training, information drive, medical dental mission and livelihood organizations positively influenced economic and social impacts.

In the study of Figuerres (2011), an assessment of stakeholders on the Reading Literacy Extension Program of UNP was conducted. Results showed that the program was considered excellent which means that the program improved the quality of education in the community: that the program catered to the enhancement of knowledge, skills, and values of pupil. It was recommended that the program be sustained and expanded to others DepEd schools. Close monitoring and evaluation by the extension services Office was also recommended.

The studies cited showed relevance to this present study in assessing the UNP Agribusiness extension program on sea urchin resource management (SURE Management).

CONCEPTUAL FRAMEWORK

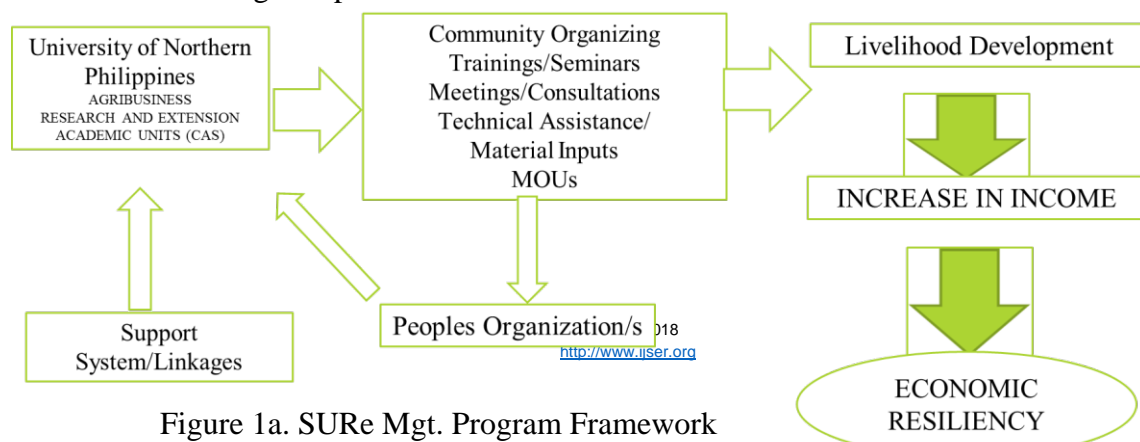
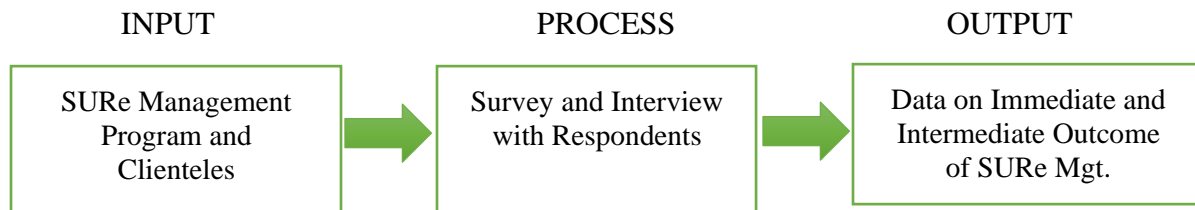


Figure 1a. SURE Mgt. Program Framework

The Sea Urchin Resource Management (SURE) Program is being guided by the

following framework:



The conduct of this assessment study was guided by the following framework:

Figure 1b. Research Framework

The strategies and immediate outcomes of the program were assessed through the conduct of surveys and interviews with the project recipients/clienteles. The assessment was only delimited to the respondents' evaluation of the implementation strategies and increase in income (immediate outcome) of the program.

METHODOLOGY

This study made use of the descriptive-assessment research design. Assessment includes the determination of

Data Gathering Instrument

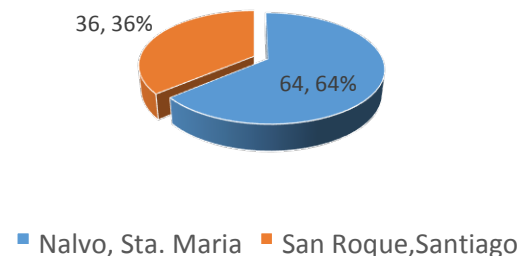
A questionnaire, formulated by the researchers, were used in this study. It was divided into two parts. Part I includes the respondents profile as well as their involvement and participation in the program.

On the extent of contribution of sea urchin culture to the increase in income of the respondents, the following ranges were utilized:

the involvement of the respondents to the program, the contribution of the program to increase in income, and the perception of the respondents on the program in terms of satisfaction rating.

Identification of Respondents

A total of 100 respondents were identified. The respondents in this study were those involved in the program in the two study areas. They were identified based on the list of training/seminar recipients, co-operators, trainers, and technical partners.



Distribution of Respondents

Table of the in	Estimated Income (Php)	Extent	1b. Interpretation Extent of Contribution Increase in Income
	7,001 and above	Very Much	
	4,000 - 7,000	Much	
	1,001- 4,000	Moderate	
	1-1,000	Little	
	0	No increase	



Part II included items based on the indicators of quality assurance that describes the program. The items were answerable by the following scales and descriptive rating.

Table 1b. Norms for the interpretation of the Assessment of SURE Management Program

SCALE	Item response	DESCRIPTIVE ASSESSMENT
5 (4.5-5.00)	Strongly agree	Excellent
4 (3.5-4.49)	Agree	Very Satisfactory
3 (2.5-3.49)	Uncertain	Satisfactory
2 (1.5-2.49)	Disagree	Poor
1 (1.0-1.49)	Strongly disagree	Very Poor

Data Gathering Procedure

Prior to the conduct of the assessment survey, permission were requested from the local executives of the two study areas.

The questionnaires were individually distributed to the respondents and were retrieved by the researchers. The respondents were asked to assess UNP's SURE Management in terms of their

satisfaction rating in the different components of the program.

Schedule of Activities. This study was conducted following the schedule of activities below.

<u>Activities</u>	<u>Actual Date of Implementation</u>							
	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>
Conceptualization of research proposal								
Development of Questionnaire and Validation								
Coordination with Local Executives								
Distribution of questionnaires/Interview								
Retrieval of Questionnaire								
Data Analysis and Interpretation								
Finalization of Research Output/Paper								

RESULTS AND DISCUSSION

Part I. Respondents' Profile and Program Involvement

A. On Respondents' Profile

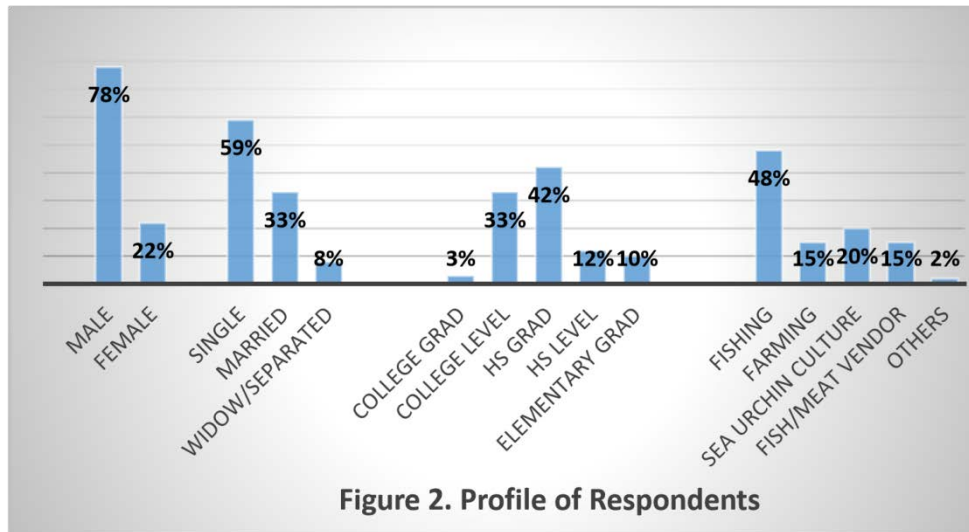
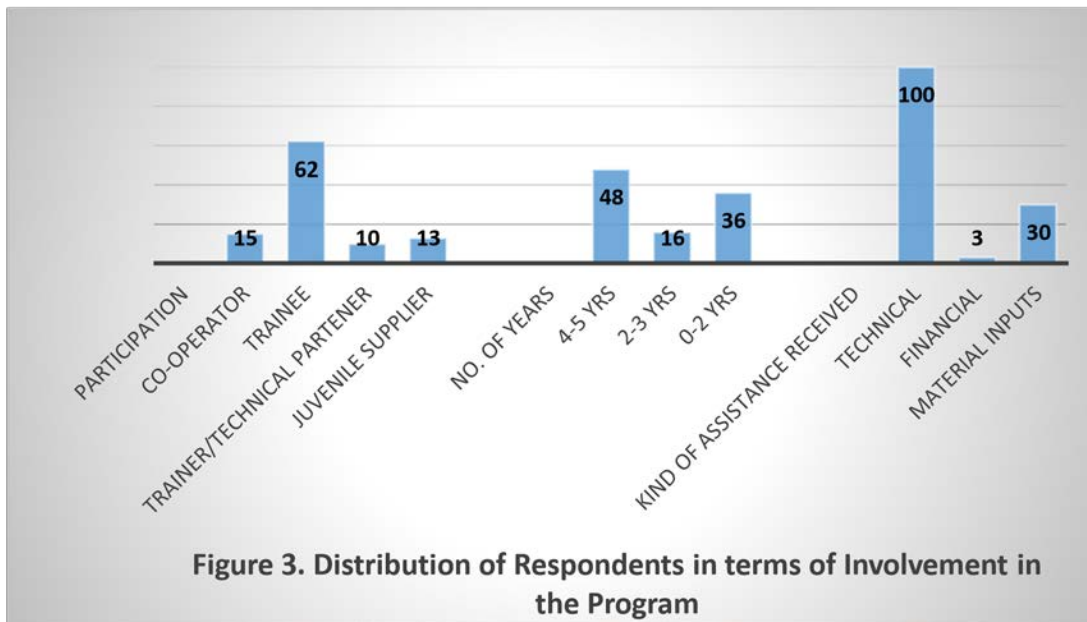


Figure 2 shows the profile of the respondents in terms of gender, educational attainment, marital status, and source of income. Seventy eight percent (78%) of the respondents are male while 22% are female. Majority are single (59%) while 33% are married and 8% are separated. Most of them are high school graduate (42%) while only 3% were college graduates. The primary source of income is fishing (48%), followed by sea urchin farming (20%), farming and fish/meat vending (15%), while the least (2%), were those involved in on-call jobs (e.g. construction).

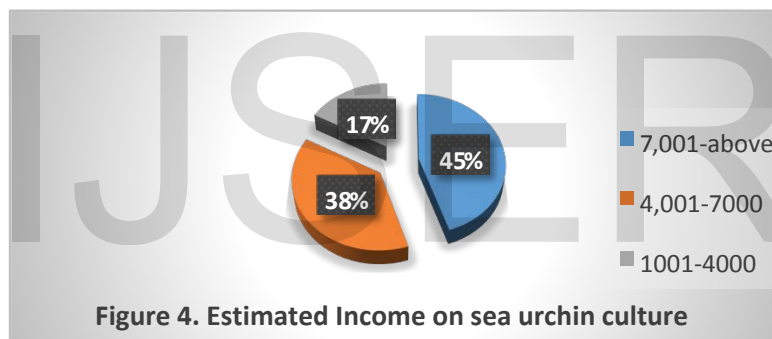
B. On Respondents' Involvement to the Program

It can be seen from figure 3 that in terms of participation, majority of the respondents were trainees (62), followed by co-operators (15), seedstock suppliers (13), while ten (10) of them serves as technical partners/trainers of the program. In terms of number of years involved in the program, 48 were already project recipients for 4-5 years, 36 are 2 years and below, and 16 have been recipients of the program for 2-3 years already.

In terms of the assistance provided by the program, all of the respondents are recipients of technical assistance (trainings and technology transfer), 30 of them receive material inputs, while 3 are financially assisted by the program.



C. Income from Sea Urchin Culture

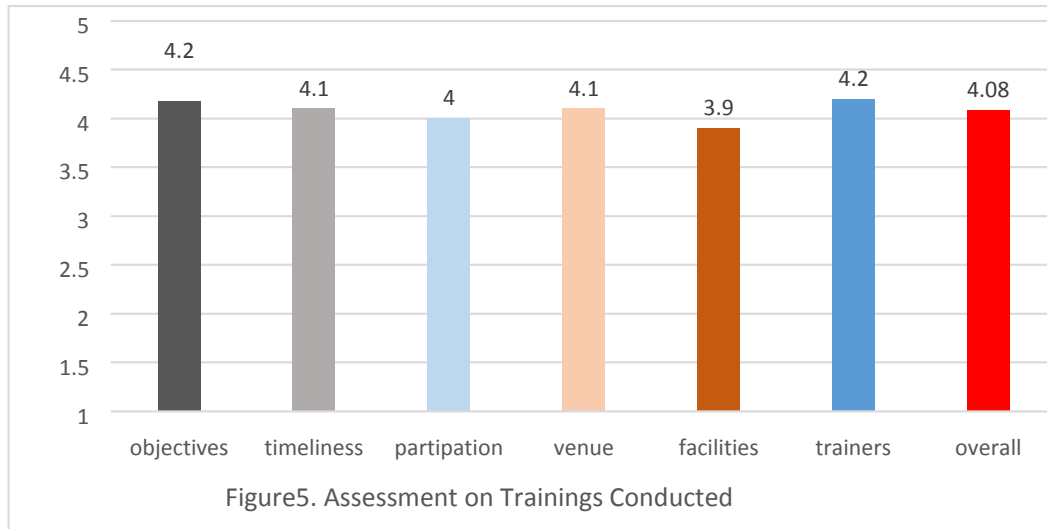


In terms of income from sea urchin culture, the respondents pointed out there was a promising increase in their income upon the venture of this livelihood. Most of the respondents (45%) gain income from sea urchin culture ranging from Php7,001 and above; while 38% had an income of Php4,001-7,000 and 17% had an income of Php4,000 and below.

This result implies that majority of the respondents had very much increase in income based on the interpretative norms on extent of contribution of sea urchin culture in increase in income (table 1a).

PART II. Assessment on SURE Management

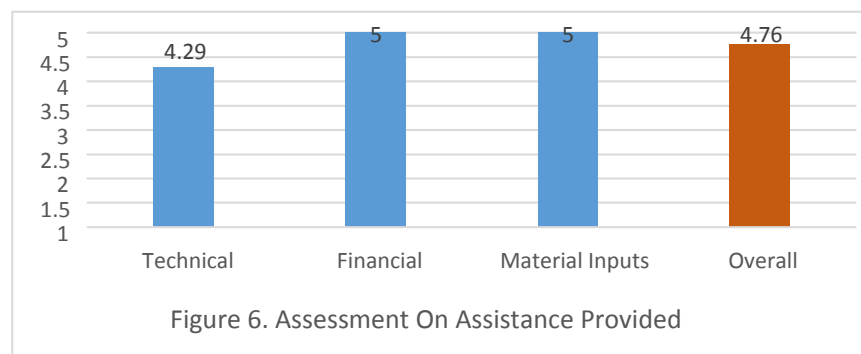
A. On Trainings Conducted/Provided



As shown in figure 5, the respondents gave an average rating of 4.2 to the trainings' objectives and trainers, 4.1 to timeliness and venue, 4.0 to participation of tarinees, and 3.9 for facilities. On the average, the respondents gave a 4.08 rating which is described as very satisfactory assessment. This result implies that the respondents were

very satisfied with the training components of the SURE Mgt. program. The efficiency of the training programs which include the use of a training module and hands-on training on site could have contributed to this result. This rating could have also contributed to the positive outcome of the program.

B. On Assistance Provided



In terms of assistance provided to the recipients, the respondents gave an average rating of 4.29 to technical assistance, described as very satisfactory. Meanwhile, a rating of 5.0 was given to material inputs and financial assistance, which is described as excellent. On the average, an overall rating of 4.76 was given by the respondents which implies that the respondents found the assistance provided by the program excellent.

CONCLUSION AND RECOMMENDATION

Based on the results of this study, it can be concluded that the recipients were very satisfied with the different components of the SURE Management Program of the University of Northern Philippines. The program has contributed to the increase in income of the respondents. With this assessment of the respondents, it can be further concluded that the SURE Mgt. Program of UNP is a sustainable program towards resource conservation and livelihood generation.

Considering these aforementioned assessment, the researchers recommend that the expansion of the program to other coastal communities be realized and that more communities be organized and registered to SEC and DTI.

Furthermore, this program should be sustained and strengthened through linkages with funding agencies such as DA-BAR.

The conduct of assessment and evaluation of the program's long-term impact is also recommended.

LITERATURE CITED

Corrales, JA, Domingo,AC, and MN Javier. 2007. Recovery and Development of

the Maritangtang (Sea Urchin) and Balat (Sea Cucumber) resources in Nalvo, Sta. Maria, Ilocos Sur: A paper presented to the 26th EENP Scientific Meeting, October 24-26, 2007, Mindanao state University, Cagayan de Oro City.

Corrales, J.A, Venezuela, CB and CI Sonido, 2009. Module on Sea Urchin Resource Management. Grow-out Culture of Sea Urchin (*Tripneustes gratilla*) in Cages. Unpublished Module. University of Northern Philippines. Tama, Vigan City.

Domingo A.C. and JA Corrales. 2002. Growth Performance and Survivorship of Sea Urchin (*Tripneustes gratilla*) in Grow-out Culture. University of Northern Philippines Research Journal. Volume XI, January-December 2002. University of Northern Philippines, Vigan City

Figuerres, Ocarina B. 2011. The Reading Literacy Extension Program of the University of Northern Philippines. UNP Research Journal. Vol.XX. January-December 2011. University of Northern Philippines. Vigan City, Ilocos Sur.

Juinio-Menez,MA. Bangi, HGP, and MC Malay. 2008. Effect of Type of feed, stocking density and grow-out Site on gonad Index, Growth and Survivorship of Cultured Sea Urchin (*Tripneustes gratilla*).The Philippine agricultural Scientist. 91:439-449. Retrieved at www.msi.upd.edu.ph

Juinio-Meñes, M.A, MC Malay, and HGPBangi. 2001. Sea Urchin grow-out Culture. Coastal Resource Management Tool. Marine Environment Resources Foundation, Inc. The Marine Science Institute. University of the Philippines, Diliman, Quezon City.

Juinio-Meñes, M.A, ND Macawaris, and HP Bangi. 1998. Community-Based Sea Urchin (T. gratilla) Grow-out Culture as a Resource management Tool. In G.S. Jamiener and A. Campbell, North Pacific Symposium on Invertebrate Stock Assessment and Management. Can Spec. Publ. Fish Aquat. Sci. 125:393-399.

Mcmanus, LT.e.al. Sea Urchin management in Bolinao, Pangasinan, Philippines: attempts on sustainable use of a communal resource. Retrieved from www.dlc.dlib.indiana.edu./dlc/bitstream/handle/10535/1703

Muraoka, Dennis D. Managing the Sea Urchin Fishery: An economic Perspective. Retrieved from <http://law.school.unm.ed/nrj/volumes/30/1/10>

Seguismundo, A.B. and R.R Navarro.2006. Socio-Economic Profile of the Sea Urchin Fishermen in Nalvo, Sta. Maria, Ilocos Sur. UNP research Journal. Vol.XV, January-December 2006. University of Northern Phillipines. Vigan City, Ilocos Sur

IJSER