

BIBLIOGRAPHY

DE LEON, JOHN DAVE V. APRIL 2011. Irrigation Practices of Farmers in Barangay Central Kapangan, Benguet. Benguet State University, La Trinidad, Benguet.

Adviser. Hilario C. Perez, MSc.

ABSTRACT

The study was conducted to determine the socio-demographic profile of the respondents, their irrigation practices, water source and problems encountered by the farmers in Central Kapangan, Benguet.

The needed data and information were gathered with the use of structured survey questionnaire supplemented with personal interview. The data gathered were analyzed using frequency and percentage.

Most of the farmers were male, middle aged; mostly married; had formal education and owned their land by tax declaration and titled. Their average number of farming is 17 years with an average cultivated land area of 680 square meters and were planted with bell pepper, beans, cucumber and crucifers.

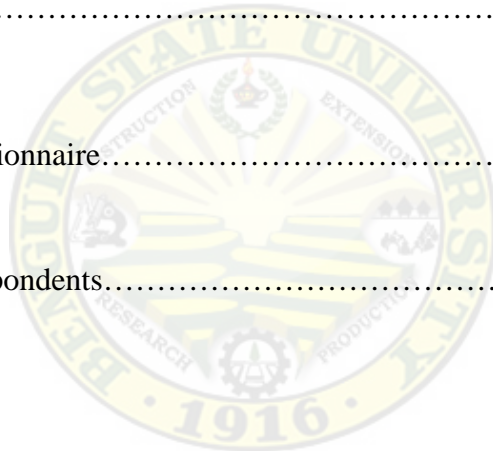
Most of the farmers irrigated their crops using water hosed from rivers/creeks and springs.

Findings showed that most of the problems encountered by the farmers in their irrigation practices were; costs of irrigation materials, maintenance, and distance of water source to the farm and topography where farmers land were higher than the water source.

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INTRODUCTION

Rationale

Irrigation systems are generally managed to allocate and distribute the available water to maximize number of potential users efficiently and equitably. On irrigation systems level, operation is generally focused on how to distribute water from the source to the farm. To achieve this, in addition to proper engineering designs and construction, sufficient operation, management and maintenance have to be employed (Khayad and Onalan, 2004).

Barangay Central is one of the Barangay of Kapangan, Benguet where there is abundance of water because of rivers and streams found in that area. Farmers sustain their crops from water coming from the different water sources. Sometimes water shortage is experienced in this area because of increasing production of vegetables, upland rice and legumes. Climate conditions also affects water supply because of droughts during dry season. This problem prompted the farmers to use some of the irrigation methods and water storage that can help maintain farm productivity during limited water supply caused by drought. Farmers also encounter problems in their irrigation practices such as costly irrigation equipment and scarce water sources.

Statement of the Problem

The study on the irrigation practices of farmers in Barangay Central Kapangan, Benguet, was undertaken specifically to answer the following questions.

1. What is the socio demographic profile of the respondents;
2. What are the irrigation practices of farmers in Barangay Central Kapangan, Benguet;
3. What are the problems in irrigation practices encountered by the farmers in Central Kapangan, Benguet;

Objective of the Study

1. To determine the socio demographic profile of the respondents.
2. To determine the irrigation practices of farmers in Barangay Central Kapangan, Benguet.
3. To determine the problems in irrigation practices encountered by the farmers in Central Kapangan, Benguet.

Importance of the Study

The study is concerned with the irrigation practices of farmers in Barangay Central Kapangan, Benguet. The study would give insight and information about the irrigation practices of farmers in Barangay Central, Kapangan. The study will be useful to farmers in their irrigation practices and will also serve as a basis in formulating extension programs for proper irrigation practices. The study may give insight and information about the problems on irrigation practices in that area for development agencies that may be able to find solutions to the irrigation needs.

Scope and Limitation

The study focused on the irrigational practices of farmers in Barangay Central Kapangan, Benguet. The socio demographic profile of the respondents, their water source and the problems encountered by the farmers on their irrigation practices were included in the study.

REVIEW OF LITERATURE

Intensive water system is needed to deliver water to all consumers. Distribution is often the major investments of municipal water works (Franzine and Linsely, 1979).

Schewab *et al.* (1993) said that irrigation provides all the greatest opportunities for increasing crop production as well as improving germination, controlling air temperature and applying chemicals with the irrigation water.

Orcullo (1997) stated that the use of irrigation technique as an aid in growing crops is a practice older than recorded history yet benefits from its promises had grow older. Developing human dependence in irrigation can he tracked back to the earliest reference, the Egyptian, the Asians and the Native American who practice irrigation in early times.

Urdon (1995) as cited by Orcullo (1997), stated that of the worlds fresh water supplies, about 51% to 70% used for agricultural sector. Around 20% are used in industrial and some 8% are used for human sanitary needs. The irrigation sectors accounts for a large consumption in agricultural and supplies to farmers to meet the crops water requirement that is otherwise supplied by rain and other means.

Hammer (1997) stated that the objectives of municipal water system are to provide safe and potable water, sufficient pressure and for fire protection and industrial water for manufacturing. Hammer added that the resource of municipal water are deep wells, shallow waters, rivers, lake and reservoirs, about two thirds of water for public supply comes from surface reservoirs.

Wicham and Valera (1979) concluded that poor water management is caused by negligence and uncooperativeness of farmers. These therefore necessities farmers to be educated for them to assume responsibilities.

One of the major efforts of development is to increase agricultural productivity. Programs had been designed to improve varieties of specific crops and make technology available for farmers. One critical factor in the efforts to increase farm productivity is irrigation (Bumidang and Tayao, 2001).

Orcullo (1997) presented that irrigation projects have proven their worth's as means of paving the way towards achieving national and rural projects. The role that irrigation can play in the development of mankind has been fully recognized and the continuing challenge is the proper management of scarce water resources to produce more food for every increasing of population in the world specially among developing countries.

One of the major causes of poor irrigation system management is the non-synchronized start of farming activities of farmers. This creates difficulty in water delivery especially during land soaking, because irrigation water has been delivered to different places at the same time. This thus not only delays farming activities within the system but also results to water loss and consequently less area irrigated. Prioritizing areas to be irrigated during times of critical water supply will also be difficult (Manuel, 2004)

The Rice Information Cooperative Efforts (1967) claimed that the present method of distributing the water irrigation is to let flow from higher to lower fields. This is the conventional way in the most of the Far East and Asian countries.

METHODOLOGY

Location and Time of the Study

This study was conducted in the municipality of Barangay Central Kapangan, Benguet (Figure 1) . It is 35 kilometers away from La Trinidad, this Barangay is one of the places in the province with high temperature and most likely drought occurs. The study was conducted in February 25, 2011.

Respondents of the Study

Thirty respondents were chosen randomly from Barangay Central. These respondents are farmers with at least 100 square meters land area planted with vegetable crops.

Data Gathered

The data gathered are irrigation practices, water source and problems encountered by the farmers in their irrigation practices.

Data Instrument and Data Collection

A house to house visit to individually interview the respondents was used in gathering the necessary information for the study. Questions were written in English but translated in Ilocano and kankana-ey for the respondents during the data gathering to get reliable answer.

Data Analysis

The data and information obtained were analyzed, consolidated and interpreted with the use of descriptive statistics such as means and percentage.



Figure 1. Map of Kapangan, Benguet showing the locale of the study

RESULTS AND DISCUSSION

Socio-Demographic Profiles

Table 1 shows that the average age of the respondents is 49 years old. The youngest is 22 and the oldest is 70 years old. Sixty three percents of the respondents were male and the rest are female. Majority (80%) of the respondents are married and the rest are single. All of the respondents had gone to school and three had acquired a college degree. The average number of years in farming is 17, the least is 5 years and 40 years is the longest farming experience.

Table. 1 Socio demographic profile

INFORMATION	NO OF RESPONDENTS	PERCENTAGE (%)
Age		
20-30	2	6
31-41	8	27
42-52	7	23
53-63	8	27
64-70	5	17
TOTAL	30	100
Average age: 49 years		

Table 1. Continued.....

INFORMATION	NO OF RESPONDENTS	PERCENTAGE (%)
SEX		
Male	19	63
Female	11	37
Total	30	100
EDUCATIONAL		ATTAINMENT
Elementary		
High school		
College		
TOTAL	30	100
NO. OF YEARS IN		FARMING
1to 10	7	23
11 to 20	14	47
21 to 30	8	7
31 to 40	1	3

Average years in farming: 17 years

Land Tenure and Farm Size

Table 2 shows that 87% of the respondents owned their land by tax declaration or titled, and only 13% are tenants.

In terms of cultivated land area majority or 67% of the respondents cultivated an area of 500 square meters and below. The rest of the respondents cultivated 600 to 3000 square meters of the farm land. The average planted area is 680 square meters.

Table 2. land tenure and farm size

INFORMATION	NO OF RESPONDENTS	PERCENTAGE (%)
Owned	26	87
Share tenant	4	13
Total	30	100
CULTIVATED LAND AREA		
500 and below	20	67
600 to 1000	3	10
1100 to 2000	3	10
2100 to 3000	4	13
<u>Average cultivated land area: 680 square meters</u>		

Major Crops Grown by the Respondents

Table 3 shows that most of the crops planted by the farmers in Central Kapangan, Benguet is bell pepper (57%) followed by bush beans (30%), chayote also with cucumber and crucifers (5%) each.

Irrigation Practices

Table 4 shows that all of the respondents individually hosed water from the water source such as rivers and springs; 67% uses water cans; 13% uses irrigational canal; 7% uses sprinkler and only 3% use the pump system to water the crops. This corroborates Orcullo(1997) stated that the use of irrigation technique as an aid in growing crops is a practice older than recorded history yet benefits from its promises had grow older. Developing human dependence in irrigation can he tracked back to the earliest reference, the Egyptian, the Asians and the Native American who practice irrigation in early times.

Rivers/creeks and springs are located either above or below the crop areas.

The irrigation practice depends on the distance of vegetable farm from the water source. If the farm is located above the water the water source, water hose, sprinklers and water pumps are used to bring up the water. It is easy to water the crops when the water source is above the farm hence, irrigation canals and water hosed can be used. In Barangay Central most water source is above the farm so water hose is often used.

Table 3. Major crops grown by the respondents

INFORMATION	NO. OF RESPONDENTS	PERCENTAGE (%)
Bell pepper	17	57
Sitting beans	9	30
Chayote	5	17
Cucumber	5	17
Other vegetables	5	17

*Multiple responses

Table 4. Irrigation practices

IRRIGATION PRACTICES	NO. OF RESPONDENTS	PERCENTAGE (%)
Individually hosed From the water source	30	100
By water can	20	67
By irrigational canal	4	13
By pump system	1	3

*Multiple responses

Water Source

Table 5 shows that all of the respondent's source irrigation water is from rivers/creeks and about 50% of the respondent's water source is from natural spring water.

This corroborates the statement of Urdon (1995) as cited by Orcullo (1997), of the worlds fresh water supplies, about 51% to 70% used for agricultural sector. Around 20% are used in industrial and some 8% are used for human sanitary needs. The irrigation sectors accounts for a large consumption in agricultural and supplies to farmers to meet the crops water requirement that is otherwise supplied by rain and other means.

Table 5. Water source

WATER SOURCE	NO. OF RESPONDENTS	PERCENTAGE (%)
Rivers/creeks	30	100
Springs	15	50

*Multiple responses

Problems in Irrigation Practices

Table 6 shows that all of the respondents encounter problems on material such as water hose which are very expensive. Maintenance is a problem due to water hose frequent monitoring and the distance of water source to the farm where in it affects greatly materials used and maintenance. Aside from these, 37% had problems in the cost of labor and 13% in topography were farmers land is higher than the water source.

This corroborates the statement of Manuel (2004) presented that one of the major cause of poor irrigation system management is the non-synchronized start of farming activities of

farmers. This creates difficulty in water delivery especially during land soaking, because irrigation water has been delivered to different places at the same time. This thus not only delays farming activities within the system but also results to water loss and consequently less area irrigated. Prioritizing areas to be irrigated during times of critical water supply will also be difficult.

Table 6. Problems in irrigation practices

PROBLEMS IN IRRIGATION	NO. OF RESPONDENTS	PERCENTAGE (%)
Material cost	30	100
Maintenance	30	100
Distance of water source to the farm	30	100
Labor	11	37
Topography	4	13

*Multiple responses

SUMMARY, CONCLUSIONS AND RECOMMENDATION

Summary

The study on the irrigation practices of farmers in Central Kapangan, Benguet was conducted to determine the irrigational practices, water source and problems encountered by the farmer's irrigation.

The average age of farmers is 49; mostly married; all of the respondents had gone to school. Most of the farmers owned their land by tax declaration or titled. The average land

cultivated area is 680 square meters and is planted with bell pepper, bush beans, cucumber and chayote.

Most of the farmers used water hosed to irrigate their crops; most of the respondent's water source is from rivers/creeks and springs.

Most of the problems encountered by the farmers in their irrigation practices are; cost of materials, maintenance, distance of water source to the farm and topography.

Conclusions

Based on the findings the following conclusion are made

1. Water hose is the main equipment used in irrigating crops in Central Kapangan, Benguet, sourced from rivers/creeks and springs
2. The problems encountered by the farmers in their irrigation methods are related to cost due to materials, maintenance, distance of water source to the farm and topography.

Recommendations

Based on the conclusion the following recommendations are made

1. The farmers in Central Kapangan, Benguet need trainings and seminars on proper irrigation practices and management for further development and better practice to maximize the use of water
2. Farmers maybe organized into a cooperative or association so that they can work together and solve their irrigation problems and seek assistance by government and private agencies to improve their irrigation practices.

LITERATURE CITED

- BUMIDANG, W. P. AND M. W. TAYAO. 2001 Evaluation on the suitability of the design criteria the head works and main system of the existing communal irrigation systems in Lagawe and Lamut, Ifugao. BS Thesis. BSU. LaTrinidad, Benguet. Pp. 9-10.
- FRANZINE, J. B. AND R. K. LINSELY. 1979. Study on Water Distribution System. Series on Water Management Engineering. Internal Student, Tokyo. p. 454.
- HAMMER, M. J. 1997. Study on Water Distribution System, Water and Waste Water Technology University of Nebraska, New York. Pp. 169-171.
- KHAYAD, B. C. AND M. B. ONALAN. 2004. AE11? 40 Hand outs on Irrigation. BSU. LaTrinidad, Benguet. P. 30.
- MANUEL, T. P. 2004. National Irrigation Association Project Completion Report.
- ORCULLO JR, N. A. 1997. Irrigation Systems Hand Book 4th Edition. Pasig City, Philippines, Busy Books Distribution. P.9.
- RICE INFORMATION COOPERATIVE REPORT. 1967. Rice Manual Production, p. 112.
- SAGMAYAO, J. D. 1996. The Dynamics of Water Distribution among the Farmers of Sagada, Mountain Province. P. 30.
- SCHEWAB, G. O. Edminster T. W. and K. K. Barnes. 1993. Soil and Water Conservation Engineering, 4th Edition. New York, Weley and Sons Corporation. P. 22.
- WICKHAM, T. H. AND A. VALERA. 1979. Study on Practices and Accountability for Better Water Management. Irrigation Systems in South East Asia. P. 74.

APPENDICES

APPENDIX A

SURVEY QUESTIONNAIRE

IA. Background information

Name (optional) _____

Address: _____

Age: _____

Civil status

Married: _____

Single: _____

Highest Educational Attainment

Elementary: _____

High school: _____

College: _____

Others (pls. specify): _____

C. No. of years in farming

1 to 10: _____

11 to 20: _____

21 to 30: _____

31 to 40: _____



II. Farm (check please)

1. Land tenure

Owned status: _____

Share

tenant: _____

2. Cultivated land area

500 and below : _____

600 to 1000: _____

1100 to 2000: _____

2100 to 3000: _____

III. Types of crop you grow

Bell pepper: _____

Sitting

beans: _____

Chayote: _____

Cucumber: _____

Crucifers: _____

IV. What are your irrigation practices

Individually hosed
from the water source: _____

By water can: _____

By irrigational canal: _____

By pump system: _____

By sprinkling: _____



V. Water source

River/creek: _____

Spring: _____

From rain: _____

well: _____

Drainage: _____

Reservoir: _____

VI. Problems in irrigation practices

Material cost: _____

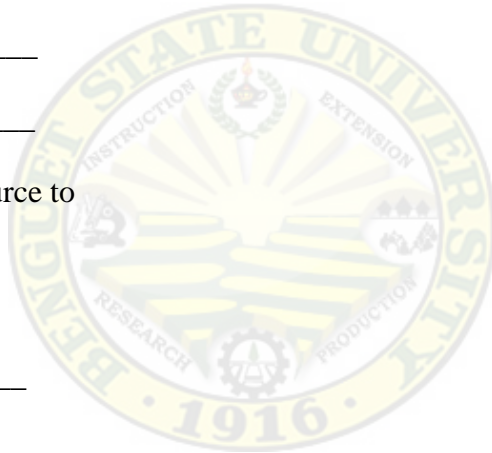
Maintenance: _____

Distance of water source to
the farm: _____

Labor: _____

Topography: _____

Water pollution: _____



APPENDICES

Appendix B. communication letter

Republic of the Philippines
Benguet State University
COLLEGE OF AGRICULTURE
La Trinidad, Benguet

February 25, 2011

Mr. Jessie Panos
Barangay Captain
Central, Kapangan

The researcher is conducting a research entitled “Irrigation Practices of farmers in Barangay Central Kapangan, Benguet”.

In this regard, may I ask permission from your good office to allow me to conduct interviews with selected respondents in your area. Rest assured all information you will provide shall be treated at most confidentially.

Thank you very much for your support and cooperation to this activity. More power and May the almighty god bless you more.

Respectfully yours,

JOHN DAVE V. DE LEON
Researcher