



# Benguet State University

## RESEARCH JOURNAL

ISSN 0117-5297

No. 65

July-December 2010

### CONTENTS

- BASELINE INFORMATION ANALYSIS FOR  
AN INTEGRATED AGROFORESTRY SYSTEMS  
IN BENGUET, CORDILLERA ADMINISTRATIVE REGION (CAR). . . . . 1-22  
*V.L. Macanes, M.M. Marquez, H. C. Perez, J. A. Wakat,  
C. P. Deponio, C. D. Abellera, V. Y. Amado*
- EROSION IN CHAYOTE FIELDS FOCUSING ON CHARACTERISATION,  
PERCEPTION AND DEVELOPMENT OF EROSION FIELD TOOL  
IN SHILAN, LA TRINIDAD, BENGUET, PHILIPPINES. . . . . 23-32  
*A.M.C. van Miltenburg*
- GENDER PARTICIPATION AND WOMEN'S VIEWS OF THE  
TEXTILE INDUSTRY IN BAGUIO CITY AND BENGUET PROVINCE. . . . . 33-47  
*B. T. Gayao, D. T. Meldoz, E. B. Alupias and J. S. Sagpa-ey*
- STATUS AND DESCRIPTION OF THE TEXTILE INDUSTRY  
IN BAGUIO CITY AND BENGUET PROVINCE. . . . . 48-74  
*B. T. Gayao, D. T. Meldoz, E. B. Alupias and J. S. Sagpa-ey*

**BENGUET STATE UNIVERSITY**  
La Trinidad 2601 Benguet  
Philippines

---

All communications should be addressed to:

**THE EDITOR**

BSU Research Journal

Benguet State Univeristy

La Trinidad, Benguet 2601, Philippines

**Telefax:**( +6374) 422-5547

**Email address:** [bsupublications@gmail.com](mailto:bsupublications@gmail.com) or  
[repo@bsu.edu.ph](mailto:repo@bsu.edu.ph)

**Website:** [www.bsu.edu.ph](http://www.bsu.edu.ph)



# Benguet State University RESEARCH JOURNAL

This multidisciplinary scientific journal publishes selected papers but not limited to those presented during the annual Benguet State University Agency In-House Review (Agriculture, Forestry and Natural Resources, Social and Education Sectors).

---

# Editorial Board

## **EDITOR**

Wilma L. Marquez

## **Lay-out Artist/ Circulation Assistant**

May Flor P. Magciano

## **TECHNICAL EDITORS**

Percival B. Alipit, PhD, Agriculture and Horticulture

Ruth S. Batani, MSc, Social Science and Sociology

Jovita M. Sim, MSc, Agricultural Economics and Agribusiness

Janet S. Luis, PhD, Agriculture and Plant Pathology

Julia A. Solimen, PhD, Extension Education and Social Science

## **EDITORIAL CONSULTANTS**

Julia A. Solimen, PhD

Rogelio D. Colting, PhD

Ben D. Ladilad, PhD

## **REFEREES**

Arnold M. Inumpa, PhD

Benguet Provincial Director

Department of Science and Technology (DOST)

La Trinidad, Benguet

Edigio F. Costales Jr.

Regional Technical Director

Ecosystem Research and Development services (ERDS)

DENR- CAR

Loakan, Baguio City

Wim Spaan, PhD

Professor

Wageningen University

Netherlands

**BASELINE INFORMATION ANALYSIS FOR AN  
INTEGRATED AGROFORESTRY SYSTEMS IN BENGUET,  
CORDILLERA ADMINISTRATIVE REGION (CAR)**

**Valentino L. Macanes<sup>2</sup>, Mario M. Marquez<sup>3</sup>, Hilario C. Perez<sup>3</sup>, Jimmy A. Wakat<sup>3</sup>,  
Christopher P. Deponio<sup>3</sup>, Cunegunda D. Abellera<sup>3</sup>, Von Y. Amado<sup>4</sup>**

<sup>2</sup>Program Coordinator, Associate Professor at the Department of Agroforestry, College of Agriculture, and Director of the Institute of Highland Farming Systems and Agroforestry, <sup>3</sup>Study Leaders and Faculty members of the College of Agriculture,

<sup>4</sup>Research Assistant, BS Agriculture  
Benguet State University

**ABSTRACT**

A baseline information analysis for Agroforestry farming systems was done in the 13 municipalities of Benguet Province. A total of 41 barangays from the different municipalities were surveyed and 95 actual Agroforestry practitioners were interviewed.

There are four Agroforestry systems being practiced in all three Agroforestry Ecological Zones (AFEZ) in Benguet Province. These are: Agrisilvicultural (combination of annual crops particularly squash, gabi, sweet potato, rice, or corn plus forest trees specifically Benguet Pine or Alnus), Agrisilvipastoral (combination of rice, corn, gabi or sweet potato including fruit trees and coffee plus domestic animals typically native pigs, native chickens, and cattle integrated under Benguet Pine or Alnus), Silvipastoral (combination of domestic animals particularly cattle under Benguet Pine or Alnus), and; Agrisilviculture plus Sericulture, (combination of gabi, sweetpotato, or rice planted in open areas with coffee planted under Benguet Pine or Alnus plus mulberry cultivated in the open areas for Sericulture). Among these Agroforestry systems, Agrisilviculture was the most practiced. These Agroforestry systems are situated in areas having greater than 100% slope (which is deemed very strong to very steep slope), have sandy loam soil, experience the Type 1 climate, with temperature range of 18-28.950C and mainly rainfed. Coffee, sweet potato, gabi, cassava, corn, and chayote are the common crops cultivated while cattle, native pigs, and native chickens are the domestic animals found in most of these Agroforestry systems. On the other hand, Alnus (*Alnus* spp.), and native Ipil-ipil (*Leucaena leucocephala* L) are the dominant Nitrogen fixing trees integrated while Benguet Pine (*Pinus kesiya* Royle ex Grodon) is the most prominent forest tree cover. Meanwhile, the identified Non-Timber Forest Species (NTFS) are different bamboo species and “rono” (*Miscanthus sinensis*) which are sold as pole or trellis, respectively. These are also used for fuel wood and fencing. The respondents perceived Agroforestry as a wide tract of land with large trees growing, unaware that they are practicing Agroforestry. For forest conservation measures, the respondents plant trees and strictly follow forest protection ordinances like not practicing the old “kaingin” system.

**Keywords:** *Agroforestry farming systems, Agroforestry, Baseline Information, Agroforestry Ecological Zones, Agrisilviculture, Agrisilvipastoral, Silvipastoral and Sericulture*

---

---

**EROSION IN CHAYOTE FIELDS FOCUSING ON CHARACTERISATION,  
PERCEPTION AND DEVELOPMENT OF EROSION FIELD TOOL  
IN SHILAN, LA TRINIDAD, BENGUET, PHILIPPINES**

**A.M.C. van Miltenburg**

Graduate student in Netherlands who conducted her thesis prerequisite  
in La Trinidad, Benguet

**ABSTRACT**

Soil erosion at chayote fields is grown in generally steep slopes of Shilan, La Trinidad, Benguet. Soil erosion is severe because of little soil cover and few soil conservation techniques. To measure soil erosion within chayote fields in Barangay Shilan, the Morgan, Morgan and Finney (MMF) model and the Assessment of Current Erosion Damage (ACED) was used. The erosion risk according to the MMF prediction is in the range of 5.7 kg/m<sup>2</sup> to 12.7 kg/m<sup>2</sup> per average year. The ACED method measured a soil loss of 13.5 kg/m<sup>2</sup> and 96.3 kg/m<sup>2</sup> in case of a gully. Both methods show severe erosion and are comparable in case of the erosion features rills and channels. However, only the MMF method takes into account sheet erosion. The ACED method includes a longer period than one average year. This makes the ACED more suitable to measure gully formation.

Interviewed chayote farmers in the area revealed their perception about erosion. Some did not notice erosion in their fields while others have slight knowledge about erosion processes. However, they noted that high rainfall and steep slopes are contributors of erosion. A difference of land management was observed, like the undergrowth of grasses. Grass left underneath the chayote plants results in less risk on erosion. Unfortunately, most farmers remove grasses because of the expected competition for moisture and nutrients with chayote. Only few farmers understood that grasses are necessary to reduce the risk on erosion. None of the farmers attended land conservation trainings.

Because of the little knowledge about erosion processes, an erosion tool was developed in this research. This can help to investigate the erosion process. The data gathered from the erosion field tool will be used in a database and the results can increase the knowledge about erosion processes. The database will be used by farmers, extension workers, students and teachers of the University. By using the database, the links between for instance, vegetation cover, rainfall, and steepness can be related with soil loss. Understanding the influence of different factors on erosion risk is important and can be recorded by use of a simple database.

**Keywords:** *soil erosion, chayote fields, erosion field tool, ACED erosion model, MMF erosion model, steep slopes*

---

---

## GENDER PARTICIPATION AND WOMEN'S VIEWS ON THE TEXTILE INDUSTRY IN BAGUIO CITY AND BENGUET PROVINCE

Betty T. Gayao<sup>1</sup>, Dalen T. Meldoz<sup>1</sup>,  
Erlinda B. Alupias<sup>2</sup> and Jaila S. Sagpa-ey<sup>3</sup>

<sup>1</sup>Science Research Specialist, Northern Philippines Root Crops Research and Training Center (NPRCRTC); <sup>2</sup>Associate Professor, University Business Affairs (UBA); and  
<sup>3</sup>Research Assistant  
Benguet State University

### ABSTRACT

The study documented gender participation, women's textile-related activities contribution to household income, and women's views of the textile industry in Baguio City and Benguet Province. Rapid market and municipal surveys were conducted, followed-up with informal in-depth interviews and case histories of some key players such as the thread and yarn suppliers, the weavers, knitters and manufacturers of textile based products, the wholesalers and retailers of finished products, and farmers engaged in sericulture.

Women are the prime movers of the textile industry representing 97% of the textile players in Baguio City and Benguet Province. Women function as proprietors, managers of weaving, wholesaling and retailing enterprises, and as weaver-designers of woven fabrics and made-up products in addition to their responsibilities in household and food management, child care and education. Participation of women in textile industry related activities contributes PhP750-70,000 per month to their household income which makes the women feel empowered, i.e. less dependent on husband's income, stronger influence in household decisions and recognition of their talents.

The textile industry is a potential investment opportunity and employment for women and men, regardless of education, age and time involvement, and is presently more in the informal sector. It has an important role in the tourist economy of the city and province attracting worker migrants mostly from Mountain Province and Ifugao.

**Keywords:** *textile industry, gender participation, weaving, women of business,*

---

---

## STATUS AND DESCRIPTION OF THE TEXTILE INDUSTRY IN BAGUIO CITY AND BENGUET PROVINCE

Betty T. Gayao<sup>1</sup>, Dalen T. Meldoz<sup>1</sup>,  
Erlinda B. Alupias<sup>2</sup> and Jaila S. Sagpa-ey<sup>3</sup>

<sup>1</sup>Science Research Specialist, Northern Philippines Root Crops Research and Training Center (NPRCRTC); <sup>2</sup>Associate Professor, University Business Affairs (UBA); and  
<sup>3</sup>Research Assistant  
Benguet State University

### ABSTRACT

This study was done to assess the status and describe the textile industry in Baguio City and Benguet Province, and to identify research and development areas towards improving the industry in the light of bringing back the grandeur of the Cordillera region. Data was generated through: rapid market walks, library research, field visits, and informal interviews of the selected industry players. The textile industry in Benguet includes the components of sericulture, yarn trading, thread and textile factory trimmings, weaving, processing or manufacturing of made-up textile products, wholesaling and retailing of finished products, and the processing of maguey or sisal fibers.

The sericulture industry is still in its infancy of development with 9.73 hectares of mulberry farms as of 2008 which is expected to increase to 26ha by 2010. Silkworm rearing resulted to a production of 657 kilograms of silk cocoons (2009) and 56kg of raw silk fibers in 2008, produced by members of the Kapangan Environmental Livelihood and Multipurpose Cooperative (KELMC).

Growth in the tourism industry spurred the establishment, and currently influencing the status of the textile industry in Baguio and Benguet. It made possible for the expansion of trade in imported thread and raw materials among 31 entrepreneurs and manufacturers of textile goods providing job opportunities. There were 108 individuals and associations included in the Department of Trade and Industry (DTI) listing of registered firms but as many as 515 individuals are formally and informally engaged in manufacturing, which includes the weaving, knitting, crocheting and the creation of madeup textile goods or novelty items. Those engaged in wholesaling and retailing of manufactured textile products includes 253 establishments. Their contribution to employment and the economy could easily reach more than PhP133 million per year.

Maguey or sisal fiber processing became an obsolete home industry among the old folks in Bokod and Kabayan with the introduction of cheaper polypropylene ropes.

Lack of support on marketing and technology, slow turn-over of capital, and the unstable and increasing cost of threads, yarns or textile fibers are some issues the textile industry in Baguio and Benguet is facing.

**Keywords:** *textile, textile industry, weaving, knitting, maguey and sisal fiber processing, sericulture, and textile producers*

---



---

## INFORMATION FOR CONTRIBUTORS

(Abridged/improved from the editorial policies of the Benguet State University)

1. All manuscripts must be the result of research activities (technical or social) that are relevant to the development thrust of the University and should not have been published elsewhere.
2. Acceptance of manuscript is on the basis of the review and approval by a corps of technical editors and selected referees.
3. Original photos should be submitted in PNG or JPEG format with corresponding captions.
4. The manuscript should not exceed 40 pages, typed double spaced in 12-point Times New Roman on one side of 8 1/2" paper with margins of 3.81 cm on the left and 2.54 cm top, right and bottom and must be submitted in hard and electronic copy via [bsupublications@gmail.com](mailto:bsupublications@gmail.com) using MS Word Program.
5. The manuscript should be organized in the following order: (a) Title; (b) Authors/s; (c) Authors/s position; (d) Abstract; (e) Introduction; (f) Materials and Methods; (g) Results and Discussion; (h) Conclusions and Recommendations; (i) Acknowledgment, optional; and (j) Literature Cited ; and written all centered.
6. The title should be a precise and concise description of the contents of the manuscripts without abbreviations and typed in upper case. If the paper is a portion of a larger manuscript, which shall be serialized and will be indicated in a superscript followed by a brief explanation.
7. The author(s) name(s) is/are written in this way: initial letter for the middle names only, first and family names in full and typed in title case. Senior author comes first in case of more than one author.
8. The abstract must be 200 words or less, summarizing the main points of the articles.
9. The introduction should contain scope and statement of the problem, brief survey of previous work and objectives and importance of the study.
10. Citations in the text follows the name and year system, e. g.

Single Author:

(Adeyemo, 2010), Yeo (2009) or Boquiren (n.d.)

Two Authors:

Pladio and Villasenor (2004), (Pladio and Villasenor, 2004)

More than Two Authors:

Folbre *et al.* (2011) or (Folbre *et al.*, 2011).

11. Materials and methods should describe very concisely but comprehensively the materials used, techniques, and lay-out of the research.
12. Scientific names and other foreign expressions such as *in situ*, *et al.*, *i.e.*, and other similar expressions are italicized. Technical terms, abbreviations and acronyms must be defined.
13. In abbreviating or using acronyms, the System International-Units (SI) of the metric system should be followed. Such abbreviations or acronyms should be written first in full before the truncated terms in parenthesis, e.g. thin-layer chromatography (TLC). If this information is given in the abstract, it should be re-identified when mentioned the first time.
14. The results should be presented logically and in objective way and conclusions stated as valid facts.
15. The discussion of results should lead to interpreting significance and /or possible similarity or discrepancy from previous findings.

- 
16. A statement on conflict of interest should be declared by authors before the Acknowledgment section. Where appropriate, Conflict of Interest statements may be in instances such as: "There are no known conflicts interests associated with the publication" or "There has been no significant financial support for the work that could have influenced its outcome." Whenever appropriate, acknowledgements are made relevant for contributions in terms of financial and technical support.
  17. Literature cited in the text should be indicated as follows: Consolacion (2000) or (Consolacion, 2000); for two authors, Colting and Maddul (1999) or (Colting and Maddul, 1999); for more than two authors, Bucu *et al.* (1999) or (Bucu *et al.*, 1999).
  18. Electronic sources must be cited as follows: author (s), year, title, date of retrieval and the complete Uniform Resource Locator (URL) of the site.
  19. Listing of literature cited is by author(s) in alphabetical order. The list contains: author (s), year, title of literature, publisher, address of publisher, volume and issue numbers and inclusive pages (printed as 1(2):1-9). Names of authors are typed in upper case: for single author, surname (separated by a comma) first before the initials of the given and middle names; for multiple authors, surname then initials of senior author followed by initials then surnames of succeeding authors. Authors are separated by commas.

Single author:

Mondejar, L.A. 1998. Understanding Student Judgments of Teaching Performance: A Conjoint Approach. Unpublished Doctoral Dissertation, University of the Philippines. Diliman. Quezon City.

Durano, M. 2008. From profit to provisioning: A gender equitable public policy. Development Alternatives with Women for a New Era. QC: Miriam College.

Eriksen, T. 2001. Small Places, Large Issues. An introduction to Social and Cultural Anthropology. 2nd ed. London: Pluto Press.

Two authors:

Hallauer, A. R. and F. O. Miranda. 1980. Quantitative Genetics in Maize Breeding. Iowa State University Press. Ames, Iowa. Pp. 49-52.

Carrasco, C. and M. Serrano. 2011. Lights and Shadows of Household Satellite Accounts: The Case of Catalonia, Spain. *Feminist Economics* 17 (2): 68-85. IAFPE: Routledge Taylor and Francis Group.

Crisologo, L. C. and L. Berlage. 2006. Bargaining in rural households: a study of decision on labor market participation in the Cordillera. *The Philippine Review of Economics*. 48 (2): 249- 537.

More than two authors:

Linsley, R., J. Franzini, D. Freyburg and G. Tchobanoglous. 1992. *Water Resources Engineering*. 4th ed. McGraw-Hill, Inc. New Jersey, USA. Pp. 510-532.

Aguilar, N. O., B. L. Cardenas and M. A. O. Cajano. 2000. Spore and Seed bearing Plants of Mount Pulag, Benguet, Philippines. Museum of Natural History. UPLB, College, Laguna, Philippines.

Braunstein, E. B., I. P. Van Staveren and D. Tavani. 2011. Embedding care and unpaid work in Macroeconomic Modelling. A structural Approach. *Feminist Economics*. 17, 4-31.

20. If necessary, protocols for manuscript preparation can be requested from the Editorial Board.

21. Please see the latest issue of the Journal for concrete details as to format.

## VISION

A premier State University in Asia.

## MISSION

Development of people imbued with academic excellence, social conscience and productivity; and actively generating and promoting environment-friendly, useful technologies to improve quality of life.

## GOALS

1. Strengthen and sustain a working environment conducive for excellence;
2. Provide quality education that will produce globally competitive and well-rounded graduates;
3. Provide quality and client-responsive research and extension services;
4. Strengthen and enhance institutional capability in generating revenue towards self-reliance
5. Develop and strengthen quality management system towards economy; and
6. Strengthen and expand private public partnership.

## PURPOSE

- \* To provide quality education that will produce globally-competitive graduates;
- \* To generate and disseminate appropriate knowledge and technologies that will promote sustainable resource development;
- \* To strengthen and enhance institutional capability in generating revenue towards self-reliance;
- \* To establish competent and effective services geared towards efficiency and economy; and
- \* To develop harmonious and cooperative University Community relationships.



## Benguet State University RESEARCH JOURNAL

All communications should be addressed to:

### THE EDITOR

BSU Research Journal  
Benguet State University  
La Trinidad 2601 Benguet, Philippines  
*Telefax:* (+6374) 422-5547  
*Email address:* bsupublications@gmail.com  
*Website:* www.bsu.edu.ph