

BIBLIOGRAPHY

LIMPAYOS, KHAROL D. MAY 2013. An Assessment of Horticulture Enterprises assisted by DOST SETUP in Benguet. Benguet State University, La Trinidad, Benguet.

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ABSTRACT

The study was conducted to assess the horticulture enterprises assisted by DOST SETUP in Benguet. Data were gathered from the horticulture entrepreneurs assisted by DOST SETUP in Benguet and at DOST-Benguet Office.

The findings showed that most of the respondents were male and married. All the respondents belong to sole proprietorship, a firm business managed and owned by one person with the intent of gaining profit. After the intervention the horticulture process followed by the respondents was upgraded. All the respondents' equipment including greenhouse were upgraded after the intervention. All the respondents were assisted on project proposal preparation and technology needs assessment. All the respondents promoted their product through word of mouth or personal communication and direct discussion with their customers. All the respondents belong to micro enterprises (below 1.5 million pesos capital) with capital ranging from 50,000 pesos- 500,000 pesos, and 1-9 regular employees.



The respondents' objectives in availing the project were to increase production, improve product quality and upgrade processing facilities or process. The level of attainment of these objectives was 50% and above.

The volume of production, employees and financial status had increased after the intervention. On the other hand, most of them encountered problems regarding their repayment schedule require by DOST SETUP. Their market outlet had decreased, as the respondents stated that due to the long travel the perishability of their product was affected that caused their customer to shift to other suppliers of the same product.

It is therefore recommended that the respondents should continue attending trainings and seminars on financial management and product marketability and competitiveness. Attendance to trainings and seminars would help them develop their skills and entrepreneurial characters and for them to be updated on the present strategies of the entrepreneurs and to meet the customers product requirement.

The different organizations that were assisting entrepreneurs they must focus more on the technology upgrading, financial assistance and providing more on marketing assistance. This is so because base from the result of the study the common problems of the entrepreneurs were on the financial resources to improve their technologies and market competitiveness of their products.



INTRODUCTION

Rationale

Horticulture is derived from the latin word *hortus*, meaning garden or enclosure, and *colore* or *cultura*, meaning to cultivate. Horticulture is the art, science, technology, and business of growing and utilizing garden and plantation crops. It is an art, as creativity is applied in using plants to enhance the beauty economic value, and utility of homes, shops, public buildings and parks. It is a science in that there is an orderly array of basic facts that explain and direct crop performance. It is a technology, because systematic practices and operations are essential to successful crop production. And it is a business in that it is concerned with profit; this aspect of horticulture is sometimes known as commercial horticulture (Bautista, 1994).

Ornamental plants have been with us since time immemorial. Even in Biblical times, the existence of gardens has been cited, like the famous hanging gardens of Babylon (Rimando, 2001).

The inherent advantages of the country that will permit the production of ornamentals that will be globally competitive include the following: (1) favourable agro-climatic conditions for the production of a wide variety of ornamental plants throughout the year; (2) competitive wages and location costs; (3) strategic geographical location near the major rapidly growing importing countries; (4) availability of a large number of work force; (5) current total export volume only constitute a small slice of the aggregate world market, so the potential for market expansion is still very high; and (6) availability of production technology for many of the ornamentals currently traded here and abroad and in the long term. Philippines forests contain a large number of ornamental plant species



whose export potential can be enhance through selection and breeding. Moreover, the species found here are not currently being produced by other countries (Rimando, 2001).

The Philippine ornamental horticulture industry since its incipient stage has been unable to fully meet an increasing domestic demand. Thus, a substantial portion of that demand has been met through importation. But the industry has remarkably improved over the past decades and has been steadily growing through the years. The marketing of flowers in the country does not follow any set pattern. In general, especially within Luzon, traders pick up the flowers from the growing areas and sell them to flower shops and stall in Metro Manila. Exceptionally, some of the big growers enter into a contract with the larger flower shops in Manila; this assures the grower of a ready market for his products, and the shops, a steady supply. Other growers have continuing arrangements with institutional buyers, such as hotels and restaurants. The bulk of flowers traded in the domestic market, however, come from small producers who grow flowers either solely of as intercrops with vegetables and other cash crops. A growing number of hobbyists have also taken to selling some of their extra flowers for cash. Under such situation, the supply of flowers in the domestic market is limited in volume and irregular, and prices are erratic. This situation has also compelled some of the larger flower shops to import from other countries to meet their domestic commitments (Anonymous, 2012).

Ornamental horticulture, a big commodity group, encompasses a wide array of plants. For classification purposes, plant products under this group fall into cut flowers, foliage and other plant parts (fresh or dried), live plants and other dried ornamentals.



Cut flowers are fresh flowers and flower buds that have been cut from their stems; these are suitable for bouquets, wreaths, corsages and special flower arrangements. Processed cut flowers also serve as additives in perfume processing and other industrial purposes.

On the other hand, foliage and other plant parts are fresh leaves and other parts of the plants. These do not, however, include blooms, cut from their roots as well as branches of trees, shrubs, bushes, and other plants, such as mosses, lichens, and grasses suitable for ornamental purposes. They are attractive in form, color and texture and used in flower arrangements.

Live plants include trees, shrubs, bushes, cuttings, and slips used for indoor decoration or for outdoor landscaping purposes. Ornaments are dyed, bleached plant materials such as whole or parts of fruits, grasses (talahib, panicum), limonium, eucalyptus and ferns (PCARRD, 2003).

This is the reason why the Department of Science and Technology (DOST) is one of the government agencies who is actively recognizing Medium, Small and Medium Enterprises (MSMEs) and is providing technical assistance to those entrepreneurs. In order to pursue this, they had launched the Small Enterprises Technology Upgrading Program (SETUP) as a nationwide strategy to encourage and assist MSMEs to adopt technological innovations to improve their operations and thus boost their productivity and competitiveness. It enables firms to address their technical problems through technology transfer and technological interventions to improve productivity through better product quality, human resources development, cost minimization and waste management and other operation related activities.



As of June 2012, there are about 8 small and medium horticulture enterprises that were assisted by the DOST SETUP in whole Benguet. To break it down, there are four (4) projects in the municipality of La Trinidad, 1 in Buguias, 1 in Tuba, 1 in Tublay, and 1 in Sablan.

Therefore, it is necessary to assess the SETUP projects of DOST in whole Benguet, the present status of the horticulture sector prior to the support of the SETUP, the type of intervention adapted from the SETUP program, and the expected results or impact of the intervention for the improvement of the functional areas of their business.

Statement of the Problem

This study focused its assessment on the horticultural enterprises assisted by DOST SETUP in Benguet. Specifically, this study wanted to know the following:

1. What is the profile of horticulture enterprises assisted by DOST SETUP in Benguet?
2. What is the status of the horticulture enterprises before the SETUP intervention?
3. What is the type of intervention adopted from the SETUP program? and,
4. What are the expected results of the intervention adopted from the SETUP project?



Objectives of the Study

Specifically, this study aimed to know:

1. the profile of horticulture enterprises assisted by DOST SETUP in Benguet;
2. the status of horticulture enterprise before the SETUP intervention;
3. the type of intervention adopted from the SETUP program; and,
4. the expected results of the intervention adopted from SETUP.

Importance of the Study

The result of the study would provide basic information to the horticultural enterprises owners to make decisions regarding their business operations and determine the interventions they needed. Other concern agency like DOST SETUP may also be guided in formulating policies to improve their services in providing the interventions needed by their customers.

Scope and Limitation of the Study

The study was conducted from January to February 2013. Respondents of this study were the horticultural enterprise owners assisted by DOST SETUP in Benguet.



REVIEW OF LITERATURE

In the current arena globalization, science and technology has become the most important factor for national economic growth and source of competitive advantage. The Department of Science and Technology (DOST), is mandated to provide central direction, leadership and coordination of all science and technology activities in the country, and tasked to formulate science and technology policies, program and projects in support of national development priorities, pursues program and activities guided by the principles of competence, competitiveness and social conscience. Among its various programs, DOST lead the way in developing the competence and competitiveness of the various sectors that make up the Philippines economy. It, therefore, gives emphasis in strengthening and giving sharper focus to Science and Technology (S&T) programs that upgrades the capabilities of the Micro, Small and Medium Enterprises (MSMEs). Among the various program thrusts of DOST, is the Small Enterprise Technology Upgrading Program (SETUP), the flagship program on technology transfer and commercialisation that is geared towards providing innovation system support to MSMEs. SETUP enables firms to address their technical problems through technology transfer and technology interventions to improve productivity through better product quality, human resource development, cost minimization and waste management and other operation related activities (DOST, 2011).



Micro, Small, and Medium Enterprises (MSMEs) Defined

As defined under Small and Medium Enterprises Development (SMED) Council Resolution No. 01 Series of 2003 dated 16 January 2003, micro, small and medium enterprises (MSMEs) are any business activities or enterprises engaged in industry, agribusiness/services, whether single proprietorship, cooperative, partnership, or corporation whose total assets, inclusive of those arising from loans but exclusive of the land on which the particular business entity's office, plant and equipment are situated, must have value falling under the following categories: by asset size: micro – up to P3,000,000; small – P3,000,000-P15,000,000; medium – P15,000,000-P100,000,000; large – above P100,000,000. Alternatively, MSMEs may also be categorized based on the number of employees: Micro 1-9 employees; Small 10-99 employees; Medium 100-199 employees; and Large – 200 and above employees (DTI, 2012).

Production Management

Product is a set of tangible physical attributes assembled in an identifiable form. It includes packaging, color, price, quality, and brand, plus the services and reputation of the seller (Etzel, *et al.*, 1991).

Manufacturing operations can be efficiently managed through a well- prepared production plan. Planning involves looking ahead to anticipate possible stumbling blocks and eliminate before they occur (DOST, 2011).



Marketing

Dolan, *et al.* (1993) states that marketing is the function of the company, or non-profit organization, with the responsibility for serving customers and for dealing with intermediaries and external support organizations such as distributors and advertising agencies. Many people came to study marketing with little or no business experience picture it as the study of selling and advertising while marketing certainly includes selling and advertising, it encompasses much more.

Human Resource Management

Human resource management is the design of formal systems in an organization to ensure the effective and efficient use of human talent to accomplish organizational goals (Jackson, *et al.*, 1997).

Human resource management includes variety of activities; one key activity is deciding what staffing the organization needs and whether to use independent contractors or hire employees to fill these needs; other activities include recruiting and training the best employees; ensuring they are high performers; dealing with performance issues and ensuring that personnel and management practices conform to various regulations. Activities also include managing the organization's approach to employee benefits and compensation, employee records and personnel policies (DOST, 2011).

Financial Management and Financial Control

The financial management of a business, an agency, a household, or other economic unit involves the acquisition, use of financial resources and the protection of equity capital from various sources (Barry, 2000).



Financial control is facilitated by the process of measuring and monitoring the performance of a business over time in order to maintain desired standard of performance. The process is dynamic one; it involves the passage of time and the use of new information that is feedback to the decision- making unit for processing, analysis and response. The control process provides an orderly framework for responding to an uncertain environment in which various signals caused by event, triggers the need for control and response (Barry, 2000).

DOST SETUP

The program covers the following industry sectors; (1) food processing, (2) furniture, (3) gifts, toys, house wares, handicrafts, natural fibers and dyes, (4) marine and aquatic resources, (5) horticulture (cut flowers, fruits and high value crops), (6) metals and engineering, (7) information and communication technology/ electronics, and (8) health products and services/ pharmaceuticals.

SETUP aims to assist MSMEs improve their productivity and competitiveness through: (1) infusion of new/ advanced technologies to improve operations of MSMEs, (2) provision of limited funds for technology acquisition, (3) manpower training, technical assistance and consultancy services, (4) design of functional packages and labels, (5) product standard and testing, and (6) database information system.

DOST Strategies to Assist MSMEs

The DOST strategies to assist MSMEs are technology provision, product standards and testing, packaging and labelling, database management information system, and linkages and networking.



Provision of technology. For the technology needs assessment and sourcing of technology the participating firms will be assisted in assessing their technology needs and appropriate technologies recommended for adoption. Once identified, the source of the technology will be determined and negotiations for the acquisition and installation of the technology will be done.

Seed fund for technology acquisition, although limited, DOST will provide one time seed fund to participating MSMEs to facilitate technology acquisition. This could hopefully enable them to access formal credit sources for future technology needs and expand their production activities.

Technical training for manpower on key production issues such as Hazard Analysis and Critical Control Points (HACCP) particularly for food processing, Good Manufacturing Practices (GMP), quality and environment management systems (QMS/EMS) as well as training on specific technical skills.

Consultancy and technical advisory services to ensure successful adoption of technologies, DOST through its pool of science and technology experts from its various agencies and members provide continuing technical and productivity consultancy services to participating firms.

Products standards and testing. For the standards to be able to compete globally and locally, Philippine made products must meet certain standards. Unfortunately, there are still no local standards for a large number of Philippine products. DOST is currently working with the Bureau of Product Standards (BPS) of the DTI in cooperation with the private sector, the academe, other government agencies and non- government organizations in establishing standards for some products.



Product testing and enhancement of testing laboratories to determine in products conform to standards; they must be tested in accredited laboratories. DOST, established a network of regional testing laboratories in cooperation with State Colleges and Universities and private testing centre's

Packaging and labelling. Products must be packaged well to increase shelf life especially for food products, improve handling and protection and ultimately improve their marketability. In addition, the export market requires appropriate labelling of food products in response to the demand of the economy and health conscious consumers. DOST established the Packaging R & D Center in its Bicutan Compound to assist MSMEs in developing functional designs for packaging, identifying and developing suitable of alternative packaging materials especially from indigenous sources.

Database management information system. Several database vital to MSMEs are now being prepared. This includes a listing of available technologies at the national and regional level, listing of S & T experts, and a listing of testing laboratories including testing services provided as well as costs. These database will be accessible through the a SETUP web page that is currently being provided.

Linkages and networking. Include raw material sourcing, marketing, technical or entrepreneurial training, financing, and equipment design and fabrication.

Problems Encountered

Laoyan (1996), states that government support was hardly provided. Farmers do not actively participate because of the notion that their experience for the last 20 years is enough to guide them in their farming.



Benefits Derived

Biñegas (2002), states that any production function involves a system consisting of and input process- output relationship model. Inputs may be categorized generally into human and non- human resources.

Increase in production may require additional manpower. Whether to use more of labour and less of machines of vice-versa would depend on the objectives of a production manager. Income would be another direct result of production occurring to workers, it may enhance human welfare which is in return would improve competences levels. However, the adverse effects of production activities on the environment may also affect human welfare, particularly health (Biñegas, 2002).

Lastly, Biñegas (2002), states that based on the foregoing concepts, it is important to view technology use from a holistic perspective to ensure that the various effects and results of technology are all mutually beneficial and reinforcing.



Conceptual Framework

Analysing the different factors that would affect the business is very significant for the attainment of the enterprise goal. The profile of the entrepreneur and its current business operations was determined. In addition, the business operation of the enterprise in terms of production, marketing, human resource and financial operations was assessed.

After assessing the present status of the business, the intervention adopted was asked to the entrepreneurs. The study identified the technology related strengths and weaknesses of an enterprise and technology gaps with its current operations.

Improvement of the enterprise, production, marketing, human resource and financial operations was analysed. Then the study gave its recommendations after the evaluation of the projects (Figure 1).

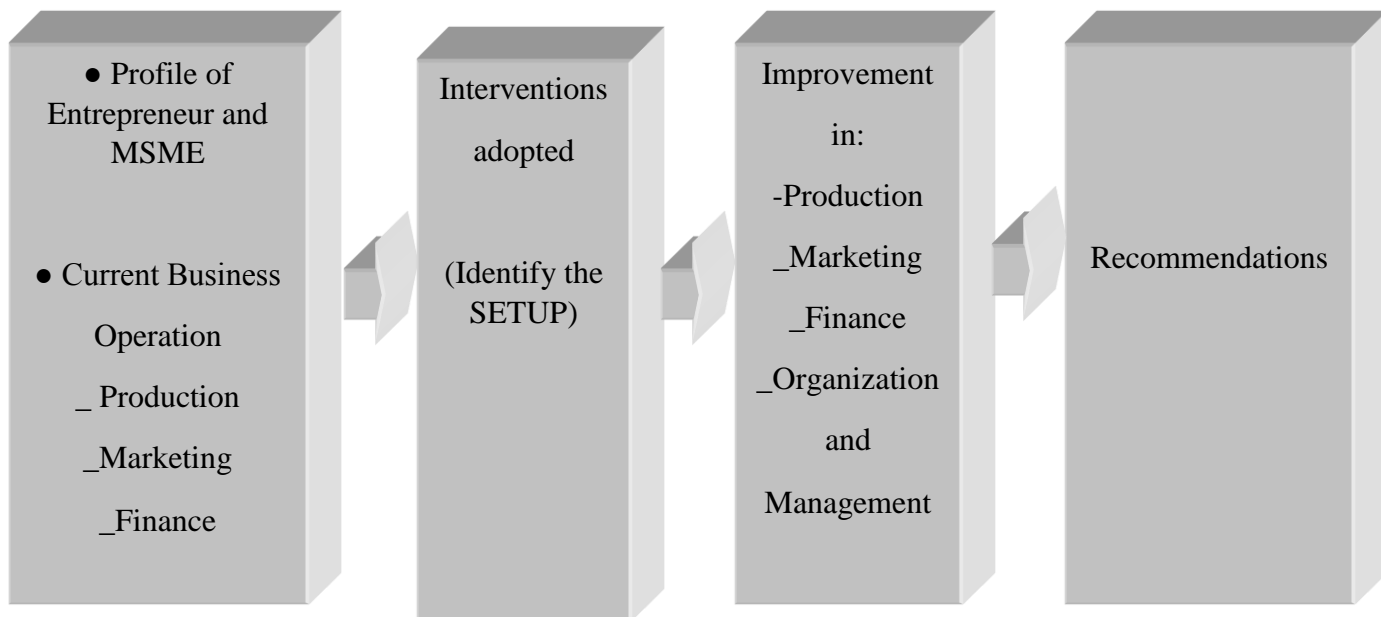


Figure1. The conceptual framework of the study.

METHODOLOGY

Locale and Time of the Study

The study area covers the whole Benguet. All micro, small and medium enterprises that were registered and assisted by the Department of Science and Technology (DOST) were included in the study.

Respondents of the Study

This study covers the micro, small and medium enterprises that were assisted by the Department of Science and Technology (DOST). The respondents of the study are entrepreneurs who own and manage horticulture enterprises.

Method of Data Collection

Data were collected with the use of survey questionnaire and given to the horticulture enterprises owners who were assisted by DOST SETUP. An interview was done when there are clarifications needed.

Data Gathered

The data gathered was focused on the profile of the respondents, enterprise profile, and status of the enterprise before and after SETUP intervention, and results / impact of the intervention adapted from the SETUP project.



Data Analysis

All responses gathered were consolidated, categorized and tabulated. The statistical tools used in interpreting the data were in percentage ranking and mean.



RESULTS AND DISCUSSION

Profile of the Respondents

The profiles of the respondents were presented in Table 1 as to their age, gender, civil status and educational attainment.

Age. Two (40%) of the respondents were on the age bracket of 51-55 years old. Then one each of the respondent was on the age bracket of 41-45, 46-50 and 56-60 years old. It shows that the age bracket of the respondents is in the age range of 41-60 years old.

Gender. All (100%) of the respondents were males. As to general assumption, farming is in line with men work, it is expected that majority were males.

Civil status. Out of the five respondents, most (80%) are married. Only one respondent was widowed. This implies that most of the business was run by the couple and their family member.

Educational background. Sixty percent of the respondents were college graduate. This implies that most of them underwent formal education and are degree holders. Then one each of the respondent took up vocational course and high school level.

Enterprise Profile

Table 2 presents the enterprise profile. These includes the type of organization, number of years in operation, year started adopting the SETUP interventions and amount of SETUP assistance.



Table 1. Profile of respondents

PARTICULAR	FREQUENCY	PERCENTAGE
Age		
41-45	1	20
46-50	1	20
51-55	2	40
56-60	1	20
TOTAL	5	100
Civil status		
Married	4	80
Widowed	1	20
TOTAL	5	100
Educational Background		
High school	1	20
College graduate	3	60
Vocational	1	20
TOTAL	5	100

Type of organization. All (100%) of the respondents' organization was under sole proprietorship. This shows that the business was managed and owned by one person with the intent of earning profit.

Number of years in operation. Forty percent of the respondents were engaged in production from the range of 1-5 years. There were 20% who engaged for 6-10 years, 20% for 11-15 years and 20% for 16-20 years. This shows that most respondents operated for 9 years as



their mean. This implied that majority of their business were well established and the respondents were already knowledgeable to run their business.

Year started adopting the SETUP intervention. Sixty percent of the respondents adopted SETUP interventions in the year 2008 to 2012 and 40% of them in the year 2003 to 2007. This indicates that majority of the entrepreneur have just adopted the SETUP interventions and that the intervention adopted were still new and fresh.

SETUP Interventions

Presented in Table 3 were the SETUP interventions availed by the entrepreneurs. It includes their degree of attainment on their objectives in availing the SETUP intervention and the problems encountered in availing it.

Sources of information about SETUP interventions. Sixty percent of the respondents were informed through the agency personnel. Then twenty percent each were informed through their local government unit and through radio. This implies that most of the respondents were visited and informed by the employee of DOST SETUP Program.

S & T interventions availed from SETUP. All the respondents have availed provision of production technology particularly in the technology acquisition. One hundred percent of the respondents were assisted and helped by the SETUP personnel in their project proposal preparation. All the respondent also availed technology needs assessment, a program of DOST where in participating firms would be assisted in assessing their technology needs and appropriate technologies were recommended for adoption. Once identified, the source(s) of the technology would be determined and negotiations for the acquisition and installation of the technology would be done.



Table 2. Enterprise Profile

PARTICULAR	FREQUENCY	PERCENTAGE
Number of years in operation		
1-5	2	40
6-10	1	20
11-15	1	20
16-20	1	20
TOTAL	5	100
Mean=9		
Year started adopting the		
SETUP intervention		
2003-2007	2	40
2008-2012	3	60
TOTAL	5	100

Packaging and labelling to improve their product handling and protection, ultimately improved their marketability and assist entrepreneurs to develop functional designs for packaging, identify and develop suitable or alternative packaging materials especially from indigenous sources. Majority of the respondents (80%) availed packaging and labelling. The respondents claimed attendance to seminar, but some never applied learning's due to lack of financial resources to buy the required materials.

Majority of the respondents (60%) availed consultancy services, a program of DOST to ensure successful adoption of technologies.



DOST through its pool of science and technology experts from various agencies and members of the R & D network including academic institutions would continue to provide technical and productivity consultancy services to participating firms.

Forty percent of the respondents were assisted in their product standard and testing, particularly on their herbal tea. A service provided by the DOST to determine conformity of products to prescribe standards.

Only twenty percent of the respondent availed linkages and networking. A program of DOST to take initiative to study policies affecting raw material supply as well as measures to establish linkages with appropriate government and non- government agencies.

As shown from the result all the respondents availed various interventions like: technology needs assessment, project proposal preparation and technology acquisition. The type pf technology acquired was in the form of green houses.

Degree of attainment and objectives of the entrepreneurs in availing SETUP. All the respondents attained their objectives in availing the SETUP interventions.

In the upgrading of production facilities, forty percent of the respondents attained by 80-90% and twenty percent attained by 50%. This shows that all the production facilities of the entrepreneurs particularly their greenhouses were upgraded through the DOST.



Table 3. SETUP Interventions

PARTICULARS	FREQUENCY	PERCENTAGE
Sources of information		
Radio	1	20
Agency personnel	3	60
Local Government Unit	1	20
TOTAL	5	100
S & T Intervention		
Technology need assessment	5	100
Project proposal	5	100
Provision of production technology		
Technology acquisition	5	100
Product standard and testing	2	40
Packaging and Labelling	4	80
Consultancy services	3	60
Linkages and Networking	1	20
Multiple response		
Degree of attainment on their objectives in availing SETUP interventions 1-50%		
To upgrade production facilities	1	20
To increase production	2	40
To improve product quality	2	40
To increase income	1	20



Table 3. Continued...

PARTICULARS	FREQUENCY	PERCENTAGE
Degree of attainment on their objectives in availing		
SETUP interventions		
60-70%		
To increase production	1	20
To generate employment	1	20
To increase income	1	20
80-90%		
To upgrade facilities	2	40
To increase production	2	40
To improve product quality	2	40
Multiple response		
Problems encountered		
Compliance with the repayment schedule	3	60
Lot of requirements and processing documents	1	20
Technology are not readily available	1	20
TOTAL		

To increase production, forty percent of the respondents' attained by 80-90% and forty percent attained by 50%. Twenty percent of the respondents' attained by 60-70%. This indicates that all the entrepreneurs' production had increased by 50% and above.



To improve product quality, forty percent of the respondents attained by 80-90% and forty percent attained by 50%. This shows that most (80%) of the respondents' product quality have improved after the intervention.

To generate employment, twenty percent of the respondents' attained by 60-70%. This shows that through the interventions the respondents generated employment.

To increase income, twenty percent of the respondents' attained by 60-70% and 20% attained by 50%. This implies that after the intervention the income of the respondents have increased by 50- percent and above.

Problems encountered. All of the respondents encountered problems in availing the SETUP interventions.

Majority of the respondents 60% encountered problems in the compliance with the repayment schedule, twenty percent of the respondents encountered constraints in the documents required, twenty percent encountered problems in the availability of the technology. This shows that most of the respondents meet problems regarding the financial resources for their business operation and maintenance.

Assessment on DOST SETUP Intervention

Table 4 shows the level of satisfaction on the intervention availed from the DOST SETUP. All the respondents claimed to be very satisfied in the technology needs assessment, project proposal and technology upgrading. In the packaging and labelling it was shown that most (80%) of the respondents were satisfied. Sixty percent of the respondents were neither satisfied in the consultancy services and marketing assistance provided by DOST.



Table 4. Level of satisfaction on the intervention availed from DOST SETUP

CRITERIA						Weighted Equivalent	Description Average		
	5 %	4 %	3 %	2 %	1 %				
Technology need assessment	3	6	1	2	1	20	- - - -	4.4	Very satisfied
Project proposal preparation	3	0	2	0	-	-	- - - -	4.6	Very satisfied
Provision of production technology		6		4					
Technology/ equipment upgrading	1	0	4	0	-	-	- - - -	4.2	Very satisfied
Packaging and labelling	-		4		-	-	- - - -	3.2	Satisfied
Post harvest	-	2	2	8	-	-	- - - -	1.6	Unsatisfied
Manpower training	-	0	2	0	-	-	- - - -	1.6	Unsatisfied
Consultancy services	1	-	2	8	-	-	- - - -	2.6	Neither
Marketing assistance	-	-	3	0	-	-	- - - -	2.4	Neither
Multiple response									

Liker's Scale:

0.1-1.0-Very Unsatisfied

2.1-3.0-Neither

4.1-5.0-Very Satisfied

1.1-2.0-Unsatisfied

3.1-4.0-Satisfied



Forty percent of the respondents were unsatisfied regarding the post harvest and manpower training that was provided through DOST , while the rest states that they did not avail trainings and seminars and that their past experience served as their trainings. This indicates that the agencies need to conduct more trainings and seminars for the entrepreneurs.

Production Status

Production status. Presented in Table 5 was the production status of the entrepreneurs before and after the SETUP interventions. This includes their production volume per year. The products produced were ornamental plants (chrysanthemum), high value crops (bell pepper, lettuce, tomato, cucumber, sugar beets and beans) and herbs (basil, mint and dandelion). They also produced strawberry and strawberry leaves.

After the SETUP interventions, as presented in the table all o respondents production had increased by 50% and above. This implies that most of them have met their one objective in availing SETUP.

Horticulture processed followed

It was shown in Table 6 the horticulture processed followed by the entrepreneurs before and after the SETUP intervention. Before the SETUP intervention 20% percent of the respondents follow the traditional way of planting horticulture products. In other hand, after they avail the intervention 100% of their processed followed become upgraded. This implies that before the intervention some respondents were not still knowledgeable in the operation. After the intervention 20% of the respondents have gain more knowledge to follow for their business operation.



Table 5. Production status

PARTICULARS	Production Volume per Year		VOLUME	Changes %
	BEFORE	AFTER		
Entrepreneur 1				
Anthurium cut flower	2,300 doz.	3, 450 doz.	1,150 doz.	50
Entrepreneur 2				
Chrysanthemum	400 doz.	600 doz.	200 doz.	50
Entrepreneur 3				
Chrysanthemum	1,800 doz.	2,700 doz.	900 doz.	50
Entrepreneur 4				
Bell pepper	400 kgs.	600 kgs.	200 doz.	50
Entrepreneur 5				
Lettuce	2,400 kgs.	4,000kgs.	1,680 kgs.	70
Tomato	960 kgs.	1,632 kgs.	627 kgs.	70
Cucumber	720 kgs.	1,224 kgs.	504 kgs.	70
Bell pepper	144 kgs.	245 kgs.	101 kgs.	70
Sugar beets	240 kgs.	408 kgs.	168 kgs.	70
Beans	240 kgs.	408 kgs.	168 kgs.	70
Basil and mint herbal	96 kgs.	163 kgs.	67 kgs.	70
Dandelion herbal			67 kgs.	70
Additional products	96 kgs.	163 kgs.		
Strawberry and Strawberry leaves				
Wheat grass		400 kgs.		



Table 6. Horticulture processes followed

PARTICULARS	BEFORE		AFTER	
	N	%	N	%
Traditional	2	40	0	0
Upgraded	3	60	5	100
TOTAL	5	100	5	100

Horticultural Equipments

In Table 7, it shows the horticulture equipment used by the entrepreneurs before and the equipment they have availed from the SETUP.

The table shows that before the SETUP interventions all the respondents owned a greenhouse but it is made up of wood and bamboos. That causes a problem on the respondents. As the year past by the wood and bamboo become weak which causes the greenhouse to give up, the greenhouse plastic covering were also torn and the nails become rusty. So when the respondents renovated their greenhouse they need to change the whole of it. And it takes long time, which causes a loss of income of the respondents.

After availing the intervention from SETUP, the entire respondents' greenhouses were functioning. The greenhouses were made up of cement, pipes and covered with polyethylene. The only problem on the part of the respondent when he needs to renovate was on the greenhouse covering.



Table 7. Horticultural equipments

PARTICULAR	BEFORE		AFTER		REMARKS
	N	%	N	%	
1 unit of Greenhouse					
Owned-Functional	5	100	0	0	Before, the greenhouses
Owned-non functional	0	0	0	0	owned by the entrepreneurs
SET UP-functional	0	0	5	100	were made up of wood and
SET UP-non-functional	0	0	0	0	bamboos.
TOTAL	5	100	5	100	

Promotional strategy.

Table 8 shows the different promotional strategy done by the entrepreneurs before and after the SETUP interventions. The promotional strategies done were as follows: through word of mouth, trade fairs, newspapers, internet, fliers and internet.

Promotion through word of mouth. 100% of the respondents used the word of mouth strategy. The respondents said that they go to the market outlet to personally offer their products, same as to as they mingle with other people they try to personally offer their products. The respondents used this strategy before and after the SETUP intervention.

Promotion through trade fairs. Most respondents 60% were joining trade fairs before the SETUP interventions. Then after the intervention 80% of the respondents were joining the trade fairs. Trade fairs during the “Panagbenga” a flower festival of the Cordilleras done in Baguio City every month of February. “Adivay ” an Ibaloi word which means coming together, a festival done every month of November in the province of Benguet to showcase their products. “Strawberry Festival” of Benguet a festival done to showcase the different products of Benguet particularly the fresh and processed vegetables that is held in La



Trinidad every month of March. Some of the respondents also attend small trade fairs during their conference along Baguio and La Trinidad.

Promotion through e-mails. Before the SETUP intervention all the respondents were not promoting through their e-mail account. In other hand, after the SETUP intervention 40% of the respondents used their e-mail accounts to inform their friends about their products, but the respondents said that orders are still done personally.

Promotion through newspaper. Only one of the respondent used newspaper and this was done after the SETUP intervention. The respondent said that he just try once to advertise his product in the midland courier. It is a local newspaper that is circulated to the whole Cordillera Administrative Region (CAR).

Promotion through fliers. 100% of the respondents were not using fliers to promote their products before the SETUP interventions. When the intervention were availed one respondent said he used fliers to promote his products. These fliers were distributed whenever he joins some trade fairs and when he personally sales his products. Most of the fliers were distributed to people that she knows.

Promotion through television. Before the SETUP intervention all the respondents were not using television to promote their products due to high cost of payment. after the intervention one respondent said he was sometimes interviewed in Abs-Cbn Northern Luzon that give him opportunity to showcase his products through media.



Table 8. Promotional Strategy

PARTICULARS	BEFORE		AFTER	
	N	%	N	%
Promotional strategies				
Word of mouth	5	100	5	100
Trade fairs	3	60	4	80
Internet (e-mails)	0	0	2	40
Newspaper	0	0	1	20
Fliers	0	0	1	20
Television	0	0	1	20
Multiple response				

Market Outlets

Table 9 shows the market outlets supplied by the entrepreneurs, horticulture products supplied to outlets and the overall products sold by the outlets.

Number of market outlet supplied. Before the SETUP intervention 80% of the respondents supplied Baguio City Public Market; 60% respondents supplied La Trinidad Public Market; 60% respondents supplied Manila and 60% supplied Dimasalang. On the other hand, after the SETUP intervention four of the respondents still supplied Baguio City Public Market, 40% respondents supplied La Trinidad Public Market, one respondent supplied to Manila and one supplied at Dimasalang.

Based from the result, the market outlet supplied by the respondents had decreased. Respondents particularly from the municipality of Buguias said that due to the long time to travel their products and the rough road travelled, the perishability of the products were affected, this cause for market outlet to reject the product and shift to other suppliers producing same products.



Table 9. Market Outlets

PARTICULARS	BEFORE		AFTER	
	N	%	N	%
Number of market outlets supplied				
Baguio City Public Market	4	80	4	80
La Trinidad Public Market	3	60	2	40
Manila	3	60	1	20
Dimasalang	3	60	2	40
Multiple response				

Horticulture Products Supplied to Outlets.

The table 10 shows all the products produced were directly distributed to their market outlet supplied. And after the intervention, production had increased for 50%, some of the respondents also expand to other horticulture products.

Products Sold by the Outlets.

Table 11 shows the products sold by the outlet. Respondents claimed to have a lot of competitors who supply the same products in their market outlets. This indicates that the entrepreneurs need to establish their specific market, for the customers' accessibility on the products they produced. And if they established their own market and have unique name it will help the respondents' products to be well known by the customers. The respondents also need to improve the quality of their product for the competitiveness of their products in the market.



Table 10. Horticulture products supplied to outlets

PARTICULARS	PRODUCTION VOLUME PER YEAR	
	Before	after
Entrepreneur 1		
Chrysanthemum		
Baguio	200	400
Manila	100	200
Dimasalang	100	0
Entrepreneur 2		
Chrysanthemum		
Baguio	500	2,000
Manila	400	0
Dimasalang	450	1,300
La Trinidad	450	0
Entrepreneur 3		
Anthurium cutflower		
Baguio	1,000	3,000
Manila	300	0
Dimasalang	1,000	450
Entrepreneur 4		
Bell pepper		
La Trinidad	4,000	5,000
Entrepreneur 5		
Basil and mint herbal	96	336
Dandelion herbal	96	216
Tomato	960	1,500
Cucumber	720	732
Sugar beets	144	400
Beans	240	400
Wheat grass	0	40
Bell pepper	144	1,300
Lettuce	2400	4,000
Strawberry and strawberry leaves	0	400

Table 11. Products sold by the outlets



PARTICULARS	PRODUCTION VOLUME PER YEAR	
	before	after
Products sold by the outlets		
Orchids	4,000 doz.	20,000 doz.
Asters	3,000 doz.	6,000 doz.
Lettuce	3,000 doz.	9,000 kgs.
Beans	12,000 kgs.	20,000 kgs.
Tomatoe	1,200 kgs.	2,000 kgs.
Cucumber	4,800 kgs.	7,500 kgs.
Sugar beats	3,600 kgs.	3,660 kgs.
Beans	1,200 kgs.	1,500 kgs.
Strawberry and strawberry leaves	1,100 kgs.	2,200 kgs.
Wheat grass	500 kgs.	1,000 kgs.
Roses	500 doz.	1,000 doz.
Asters	4,000 doz.	6,000 doz.

Financial Status.

The table 12 present the financial status of the entrepreneur before and after the SETUP intervention. The initial capital of the respondents was on the range of 50, 0000 to 500,000 pesos while their present capital was on the range of 100,000-900,000 pesos. This indicates that their capital has increased by half percent, but still they belong to micro (less than 1.5 M).



Table 12. Financial Status

PARTICULARS	BEFORE		AFTER	
	F	%	F	%
Capital				
50,000-100,000	1	20		
100,001-200,000	1	20		
200,001-300,000	1	20	2	40
300,001-400,000	1	20		
400,001-500,000	1	20	1	20
500,001-600,000				
600,001-700,000			1	20
700,001-800,000				
800,001-900,000			1	20
TOTAL	5	100	5	100

Number of Employees. Presented in the Table 13 was the number of employees of the entrepreneur before and after the SETUP intervention.

Table 13 shows that before the SETUP intervention all the regular workers of the entrepreneur were from the range 1-4. On the other hand, after the SETUP intervention, most (60%) of the respondents had regular worker were on the range of 5-9.

On the part time worker of the respondents before the SETUP intervention most (80%) of the respondents worker were on the range of 1-4 while after the intervention most (80%) of their worker were on the range of 5-9. The result indicates that the number of employees increases after the intervention; they still belong to micro enterprise (1-9 numbers of employees).



Table 11. Number of Employees

PARTICULARS	BEFORE		AFTER	
	N	%	N	%
Total employment generated				
Regular				
1-4	5	100	2	40
5-9	0	0	3	60
TOTAL	5	100	5	100
Part-time				
1-4	4	80	1	20
5-9	1	20	4	80
TOTAL	5	100	5	100

Management capability improvement after the SET UP intervention

The table 14 shows that 100% of the respondents' management capabilities have improve after the SETUP intervention particularly to improved or fixed their organizational structure. This implies that they study and reconstruct their organizational structure for them to eliminate some division that contribute small amount to the whole operation through SETUP Program.



SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to determine the profile of horticulture enterprises assisted by DOST SETUP in Benguet, status of the horticulture enterprises before the SETUP intervention, the type of intervention adopted from the SETUP program and the expected results of the intervention adopted from SETUP project.

There were five horticulture enterprises who served as the respondents. The study made use of primary and secondary data. Secondary data were taken from the office of DOST (Department of Science and Technology) Benguet. The data collected were tabulated and analysed.

From the gathered data, the age bracket of the respondents is in the age range of 41-60 years old. All the respondents were male, since according to connotation farming is in line with men than women. 80% of the respondents are married and 60% of them were college graduate that shows that most of the respondents were degree holder.

All the respondents' firms were sole proprietorship or a business that is owned and managed by one person with the intent to gain profit. The respondents business was well established and they were knowledgeable to run their business with an average of 9 years in operation. Most of the respondents avail the SETUP intervention in the year 2008-2012 that showed that the intervention they availed are still new to them.

The production volume of the entrepreneurs before the SETUP intervention were just enough to their market outlet and expansion to other product was not yet done.



The horticulture process followed by the entrepreneurs before the SETUP intervention was the traditional way.

On their greenhouses most of these were made up of wood and plastic as their greenhouse covering. In here, the respondents need to change the wood, nails and plastic covering when they are going to renovate.

All 100% the respondents promote their products through word of mouth or personally and directly discuss to their customer about the products. Most respondents (60%) also attend local trade fairs.

Most of them supplied more than one market outlet and no one yet established their own market outlet. In the market outlet they supplied the respondents have a lot of competitors who also supplied the same products.

The capitals of the entrepreneurs belong to micro (below 1.5 million pesos) since their capital was in the range of 50,000-500,000 pesos.

The total employees of the respondents were from the range 1-5 this also implies that they belong to micro (1-9 employees).

There were a lot of SETUP interventions that were availed by the entrepreneurs. The respondents said that most of them were visited and informed by the SETUP personnel about the intervention offered by DOST.

The S & T intervention they adopt, all of them availed of production technology particularly technology acquisition, project proposal preparation and technology needs assessment.



Hundred percent of the respondents' objectives in availing SETUP were to increase their production, improve their product quality and to upgrade their production facilities or process. All of them have met their objectives by 50% and above.

In availing the SETUP intervention most of them encountered problems particularly in the compliance with the repayment schedule required by DOST. Respondents said that sometimes due to lack of budget their repayment schedule was delayed.

In the assessment of intervention provided by DOST, all the respondent were very satisfied in the technology upgrading, project proposal preparation and technology needs assessment.

After the SETUP intervention, 80% of the respondents' production had increased by 50% and one respondent increased by 70%. This implies that all of them have met their one objective in availing SETUP. One the respondent stated that after availing the SETUP, he ventured in the production of additional horticulture products such as vegetables like beans and lettuce.

The horticulture process followed by the entrepreneurs after the SETUP intervention was upgraded.

The green houses of the respondents are all functional and made up of cement and pipes, which is stronger than before.

Respondents who joined trade fairs have increased but still word of mouth promotion is still their main strategy. Some the respondents also used their e-mails to informed their friends and customers.



The market outlets supplied by the respondent had decreased, because some of them said that due to the long time to travel their products and the rough road travelled, the perishability of the products were affected. The respondents also have a lot of competitors' supply the same products to their market outlet, this cause market outlet to reject the product and shift to other suppliers of the same products.

The financial status of the respondents had increased but they still belong to micro as to their capital that is below 1.5 million pesos.

The respondent's also generated employment but still they belong to micro as to the range of their employees was 1-9.

All the management capability of the respondents has improve after the SETUP intervention. They have reconstructed and eliminate some division that contribute small amount in the operation.

Conclusions

After the results are interpreted the following conclusions were drawn:

1. The respondents were all males and most of them were married and college graduate.
2. All the respondents' firm was sole proprietorship, a firm owned and managed by one person with the intent of gaining profit.
3. After the respondents availed the intervention all their processed followed in their operations was upgraded.



4. All the respondents promote their products through word of mouth of personally and directly discuss to their customers.
5. All the respondents belong to micro enterprise (below 1.5 million pesos) as to their capital range of 50,000-500,000 pesos; and as to their permanent employees they also belong to micro enterprise (1-9 employees) since their range of 1-9 employees.
6. All the respondents availed provision of production technology particularly technology acquisition, project proposal preparation and technology needs assessment.
7. All the respondents availed equipment upgrading. They were provided a whole unit of greenhouse; it is made up of cement, pipes and polyethylene as the greenhouse covering.
8. On the other hand, most of them had encountered problems regarding the repayment schedule required by the SETUP and their market outlet had decreased.

Recommendations

1. The entrepreneurs should continue attending trainings and seminars on financial management and product marketability and competitiveness since from the result most respondents encountered problem on the freshness of their products and repayment schedule. To help develop their skills and entrepreneurship characters and for them to be updated on the present strategies of the entrepreneurs and to meet the customer's requirements.



2. The respondents need to establish their specific market outlet for the accessibility of their customers and for them to have specific place to go when they need the products.

3. The DOST must continue to help the entrepreneurs, improve their productivity, market competitiveness and technology upgrading.

4. The different government organization that are assisting entrepreneurs need to focus on the technology, marketing and financial assistance This is so because based from the result of the study the common problem of the entrepreneurs were on the financial resources and to improve their productivity and marketability of their products.



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