

BIBLIOGRAPHY

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ABSTRACT

This study was conducted in Villasis, Pangasinan to identify the major hybrid eggplant producing barangays, and to know the impact of using improved technology on eggplant production to the farmers' livelihood. A total of 30 respondents were interviewed. Personal interview was used to collect the needed data..

The hybrid eggplant producing barangays in Villasis in the order of highest to lowest were Piaz, Caramutan, Barangobong, Lipay, San Blas, Puelay, Bacag, Amamperez and Tombod, Lomboy, San Nicolas, and Capulaan. There were 336 has. planted to eggplant in Villasis in 2007.

The reasons for adoption of the hybrid seeds include higher demand or marketability, and soil adaptability. The impact on livelihood from the adoption of the hybrid seeds were increase in household income, purchased farm tools or equipments, paid their debts, and sent their children in school.

The main problems of the eggplant growers were low price and oversupply of eggplant or competition due shifting of some farmers from their native eggplant (domino, jackpot, decalb) to the adoption of new hybrid variety (casino), and other provinces and municipalities that produced eggplants, pushing prices down.

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INTRODUCTION

Rationale

Villasis is a 3rd class municipality in the province of Pangasinan, Philippines. It is a small farming town situated by the Agno River. On its borders are the towns of Malasiqui and Asingan and Urdaneta City. According to the 2000 census, it has a population of 54,224 people in 11,001 households.

Sitting on 6,500 hectares of fertile land, most of which are agricultural, Villasis carved a name through the sweat and tears of its 60,000 inhabitants, being the “vegetable bowl” if not the “pinakbet town” of the province of Pangasinan. It produces ingredients for the vegetable dish “pinakbet” (a favorite Ilocano dish) – tomatoes, eggplant and ampalaya. But the biggest harvest is eggplant.

Some 270 hectares of the town are planted eggplant every after rice harvest and each hectare averages a yield of 40 tons of eggplant. This translates to roughly 10,800 tons of eggplant produced by the town every year.

In year 2006, Villasis held the ‘Talong Festival’, lining up the town’s main highway with a 500 meter long grill on which 3,000 kilos or more than 20,000 pieces of eggplant were simultaneously cooked. It was a ‘dry run’ for a much bigger activity being planned for next year when the town will try to break or make a record on the Guinness Records (World’s Longest Eggplant Grill) in the year 2006.

Before, traditional farmers often took the pains of bringing their eggplants to Divisoria for sale and distribution in various parts of Metro Manila. But since year 2006,



they only have to transport the product from the farms to the town proper where a large vegetable ‘bagsakan’ market was built from where traders are buying the products directly from farmer-producers. One hectare of eggplant farm will produce conservative 160 bags of eggplants, one bag of which weighs 10 kilograms. Farmers said eggplants give better income than rice or corn that is why more of them are planting eggplants yearly (Fuertes, 2006).

However, productivity of eggplant has economic potentials and can become a highly profitable livelihood to the people especially in the major eggplant growing areas. Consequently, it is essential to the government to work hand in hand to develop the technology used in the production of eggplant, to improve marketing system too.

The eggplant technology to be evaluated in this study is the variety casino eggplant along with the package of technology (POT) required for the said hybrid variety.

Statement of the Problem

The study focused on the survey and analysis on the impact of technology used by the farmers to their livelihood in eggplant production. Basically, the study aimed to know the comparison between casino growers and non-casino growers, farmers’ sources of income, the utilization of the land, crop production, and the changes occurred in adopting new variety.

Objectives of the Study

The study aimed to 1) identify the major hybrid eggplant producing barangays in Villasis, Pangasinan with the respective number of areas planted and number of eggplant



growers, 2) estimate the total area cultivated and area devoted to eggplant production by the respondents; 3) identify the improved technologies adopted by the farmers in eggplant production, and the production season for eggplant 4) determine the advantages of using new eggplant technologies in terms of: a) productivity, b) marketing, c) income, 5) identify the sources of technology and information related to eggplant production, and 6) find out production problems encountered by casino growers.

Importance of the Study

Production of eggplant accounts high total volume of top vegetables grown in the country. Its value is the highest among the leading vegetables. Every farmers engaged in this enterprise should also consider marketing and improved technology to be used as a factor in attaining profitable production.

Its comprehensive predicament for the production and for using improved technology will appraise in this study. Hence, it can dignify understanding of the various production operations done by the farmers, determine factors in using improved technology and its importance, and also serve as a useful guide for eggplant production to the farmers.



REVIEW OF LITERATURE

The Crop

Eggplant (*Solanum melongena* L.) originated in the Indo- Burmese Region with China and Africa as possible second center of diversity. It is also known as aubergine, brinjal, melogene. It is grown as an annual but it is weak perennial; erect branching up to 1.5 m tall with deep penetrating root. The fruits are usually mixed with meat and other vegetables; part of some Filipino menu like 'pinakbet' and 'kare-kare'. It is source of thiamine, niacin, riboflavin, and protein (Bureau of Agricultural Research, 2005).

Eggplants produce a bushy, vigorous plant with large leaves, woody stems and attractive flowers. Some eggplant cultivars can reach a height of 4.5 feet. Eggplants have a deep taproot, which helps them tolerate dry weather. Flowers are open for two to three days and are self-pollinated. However, bees may improve both pollination and yield of eggplant. Fruits vary in size and shape, from round to bell-shaped, oval or elongated. Oriental or Japanese eggplant cultivars have elongated fruit. The fruit surface of eggplant is smooth and glossy. Fruit color can be yellow, green, white, purple, black, violet or various combinations of these colors (Chen and Li, 2001).

Variety Selection

Many eggplant cultivars are readily available from major seed companies. Cultivars differ in earliness, as well as in size, shape and color of mature fruit. A primary consideration in cultivar selection is market preference. Individual markets usually prefer or require a specific type(s) of eggplant. Ideally, a potential grower should identify the



prospective market (buyer, broker, packer), then determine (1) if that market perceives a need (demand) for the product, (2) the production volume (bushels per acre) which the market could use, (3) the specific varieties characteristics desired or required by the market, and (4) the market window or duration of time during which that market anticipates a demand for eggplant. The grower should then determine cultivars, planting dates and acreage based on perceived market needs, varieties attributes and average climatic conditions for specific areas of production (Granberry, 1990).

Harvesting

First harvest of eggplants begins 65 to 90 days from transplanting. Eggplants should be harvested when the fruit surface is glossy and tender and before seeds within the fruit become brown. Fruits should be harvested using sharp knife. Leave calyx attached to the fruit. Best time to harvest, early in the morning or late in the afternoon. Place newly harvested fruits under shade. Harvest may be done two to three times a week during peak growth, depending on the fruit size desired (Tanquezon, 2005).

Insect Management

Insects are one of the most significant pests of eggplants. Cucumber beetle, Colorado potato beetle and flea beetle are particularly problematic in Missouri. Immediately after transplanting, scout plants for insect damage. Most significant damage on yield and quality of eggplant occurs from early-season damage. Flea beetles chew small holes in the leaves of eggplants but do not feed on the fruit. Cucumber beetles and Colorado potato beetles chew the leaves and can also damage the fruit. Rotate eggplants



with vegetables botanically unrelated to eggplant. Separate eggplants from other vegetables that may attract cucumber beetles and Colorado potato beetles (e.g., potatoes and cucumbers). Row covers or lightweight insect-exclusion covers can be used (Jett, 1993).

Marketing

The success of vegetable production and processing endeavor depends on whether the consumers will be able to avail of the products in the right form, time and place. The production and marketing system of eggplant consist of a myriad of relationship and arrangements which are reflected in the manner by which the production and market are structured, conducted and prices are transmitted to each level from the producer to the consumer. The producers and the consumers are in the both ends of the eggplant industry. Any strategies to stabilize the supply of eggplant throughout the year will affect both of them. The consumers will be benefited with a relatively stable price of eggplant in the market but there may be some consequences on the producers and the production environment. This would need adequate understanding and assessment of the existing eggplant production and marketing system and assess the socio-economic gains and impacts of stabilizing the supply of eggplant (Villancio, 2002).

Livelihood's Impact

Impact assessment of public agricultural research has always been viewed as an important activity to ensure accountability, maintain credibility, and improve internal decision- making process and the capacity to learn from past experience. Impact



assessment is a critical component of agricultural research in that it helps to define priorities of research and facilitate resource allocation among programs, guide researchers and those involved in technology transfer to have a better understanding of the way new technologies are assimilated and diffused into farming communities, and show evidence that clients benefit from the research products.

Impact studies have faced both conceptual and empirical challenges, partly due to the complexities of the relationships between agricultural technology and rural livelihoods. As the goals of agricultural technology development change from increasing food production to the broader aims of reducing poverty, both technology development and studies of its impact become more complex. Yet, examining the impacts and impact pathways of different types of agricultural technologies is essential to guide future research ways that will make the greatest contribution to poverty reduction. The sustainable rural livelihoods framework (SRLF) has been adapted and used in assessing the impact of new agricultural technologies in livelihoods.

Impact of agricultural productivity and on rural incomes has been an important contribution of the CGIAR (Consultative Group on International Agricultural Research) centers since their inception. Apart from directly shaping policies and institutions, the impact of agricultural research-for-development itself may influence agricultural policy when successful research-for-development practices, which obviously have elements of appropriate policies and institutions as part of the “package”, are taken up and applied at larger scale. Agricultural policy, however, affects the level of agricultural research impact through its effect on incentives for technology adoption. A promising strategy to minimize the influence of unfavorable policies and institutions is to broaden the scope of



research to include aspects of development using the technologies as a means. A framework representing these interactions among agricultural research, policy, and livelihoods is needed for a more complete understanding of the impact of new agricultural technologies on rural livelihoods and on poverty alleviation (Adato and Meinzen, 2002).



METHODOLOGY

Locale and Time of the Study

The study conducted in the major eggplant growing barangays in the municipality of Villasis, Pangasinan namely: Pia, and Caramutan. This study conducted from December 2007 to January 2008.

Respondents of the Study

The respondents of the study were the eggplant producers in the identified areas. There were 30 respondents in which they are all eggplant producers.

Data Collection

The primary data for this study collected through key informant interview (KII) with people who were knowledgeable on the study area such as the technicians and farmer leaders.

The researcher gathered the secondary data from the Municipal Development Plan of Villasis and other reading materials.

Data Analysis

The data gathered were summarized, and tabulated based on the objectives of the study.



RESULTS AND DISCUSSION

Profile of the Respondents

Table 1 shows the profile of the respondents as to age, sex, educational attainment, and source of income. The mean age of the respondents was 39.27 years. Most (96.7%) of the respondents were males. Most (80%) had education within the high school level and the rest within college (13.3%) and elementary (6.7%) levels. Agriculture is the major source of livelihood of all the respondents.

Table 1. Profile of the respondents

| PARTICULARS | FREQUENCY | PERCENTAGE |
|-------------|-----------|------------|
| Age | | |
| 16 - 25 | 4 | 13.3 |
| 26 - 35 | 6 | 19.8 |
| 36 - 45 | 10 | 33.4 |
| 46 - 55 | 9 | 29.9 |
| 56 - 65 | 1 | 3.3 |
| TOTAL | 30 | 100 |
| MEAN | 39.27 | |



Table 1. Continued...

| PARTICULARS | FREQUENCY | PERCENTAGE |
|-------------------------------|-----------|------------|
| Sex | | |
| Male | 29 | 96.7 |
| Female | 1 | 3.3 |
| TOTAL | 30 | 100 |
| Educational Attainment | | |
| Elementary | 2 | 6.7 |
| High School | 24 | 80.0 |
| College | 4 | 13.3 |
| TOTAL | 30 | 100 |
| Source of Income | | |
| Agriculture | 30 | 100 |
| TOTAL | 30 | 100 |

Hybrid Eggplants Producing Barangays

Table 2 shows the barangays producing eggplant (casino variety), the number of cultivated areas and number of farmers. Barangay Piaza was the top producing barangay with cultivated area of 65 has, also considered having the largest number of casino growers. Caramutan is next with 50 has and 91 farmers followed by Barangobong with



45 has and 82 farmers, Lipay with 36 has and 45 farmers, San Blas with 32 has and 58 farmers, Puelay with 28 has and 51 farmers, Bacag with 25 has and 45 farmers, Amamperez and Tombod with 18 has and 33 farmers each, Lomboy with 15 has and 27 farmers, San Nicolas with 3 has and 5 farmers, Capulaan with 2 has and 5 farmers.

Table 2. Hybrid eggplant producing barangays

| BARANGAYS | AREA OF EGGPLANT (Ha.) | NO. OF FARMERS |
|--------------|------------------------|----------------|
| Piaz | 65 | 118 |
| Caramutan | 50 | 91 |
| Barangobong | 45 | 82 |
| Lipay | 35 | 64 |
| San Blas | 32 | 58 |
| Puelay | 28 | 51 |
| Bacag | 25 | 35 |
| Amamperez | 18 | 33 |
| Tombod | 18 | 33 |
| Lomboy | 15 | 27 |
| San Nicolas | 3 | 5 |
| Capulaan | 2 | 4 |
| TOTAL | 336 | 601 |



Total Cultivated Area of Respondents

Majority (73.3%) of the respondents cultivated less than half hectare of land. The mean area cultivated was .6750 ha (Table 3).

Cariño (2007) reported that out of 7, 581.61 ha total land area of Villasis, 336 ha allotted to eggplant production.

Table 3. Total cultivated area

| AREA | FREQUENCY | PERCENTAGE |
|-----------------|-----------|------------|
| .5ha and below | 22 | 73.3 |
| .51ha – 1 ha | 3 | 10.0 |
| 1.01ha – 1.5 ha | 2 | 6.7 |
| 1.5ha – 2ha | 3 | 10.0 |
| TOTAL | 30 | 100 |
| MEAN | .6750 | |

Area Devoted to Eggplant Production

Out of the total area cultivated, a greater percentage of the respondents devoted .02 – .025 ha for eggplant production.

The area devoted to eggplant production is estimated to be more than 20,000 hectares with small farms ranging from 0.5- 2.0 hectares in size. The average yield of eggplant per hectare in the Philippines is 9.95 tons, which is about half that of the average yield in Asia in the world (Vijayraghavan, 2006).



Table 4. Area devoted to eggplant production (ha.)

| AREA | FREQUENCY | PERCENTAGE |
|-------|-----------|------------|
| .20 | 1 | 3.30 |
| .25 | 14 | 46.70 |
| .50 | 10 | 33.30 |
| 1.00 | 4 | 13.30 |
| 1.50 | 1 | 3.30 |
| TOTAL | 30 | 100.00 |
| MEAN | .4733 | |

Production Season for Eggplant

Table 5 shows the production season for eggplant. The months of October to March are the most common season for eggplant production by 73.3% of the respondents. The rest plant from the months of October to May by 10%, September to April by 6.7%, and 3.3% for the months of September to May, November to May and January to May.

Majority of the respondents follow a six months cropping period for eggplant. Eggplant takes about 65-90 days to harvest from transplanting. This means to say that the farmers harvest for six months before they change crop or end the production period. One respondent however extended up to 9 months.

Atchuela (2007) stated that regular planting is from October to January; harvesting starts from December which lasts up to April or even May. Off season planting is from April to June; harvests starts from June which lasts up to September.



Table 5. Production season for eggplant

| MONTH | NO. OF MONTHS | FREQUENCY | PERCENTAGE |
|-------------------|---------------|-----------|------------|
| October – March | 6 | 22 | 73.30 |
| October – May | 8 | 3 | 10.00 |
| September- May | 9 | 1 | 3.30 |
| September – April | 8 | 2 | 6.70 |
| November – May | 7 | 1 | 3.30 |
| January – May | 5 | 1 | 3.30 |
| TOTAL | | 30 | 100.00 |

Adoption of Hybrid Seed

The new technology adopted by the farmers as described in the earlier section is the use of hybrid eggplant seeds. The farmers gave several reasons for adoption of the hybrid seeds, also considered as advantages of using the new technology. These include higher demand or marketability, and soil adaptability (Table 6). It is also noted from the KII (Key Informant Interview) that the hybrid varieties produce more fruits and have longer shelf life.



Table 6. Reasons for adoption of hybrid varieties

| REASONS | FREQUENCY | PERCENTAGE |
|-----------------------------|-----------|------------|
| High demand / marketability | 4 | 80.0 |
| Soil adaptability | 7 | 23.3 |

* Multiple response

In terms of production, Table 7 presents the volume of production for eggplant which has the average mean of 4, 623.33. The production of eggplant grew from 15-20% as farmers became more aware of hybrid variety's tremendous returns with just a bit more investment (Cariño, 2007).

Table 7. Volume of production for eggplant

| VOLUME | FREQUENCY | PERCENTAGE |
|-----------------------|-----------|------------|
| 200 kg - 1,500 kg | 8 | 26.50 |
| 1,600 kg – 2,500 kg | 7 | 23.30 |
| 5,100 kg – 10,000 kg | 5 | 16.70 |
| 10,100 kg – 20,000 kg | 1 | 3.30 |
| 21,000 kg – 25,000 kg | 2 | 6.70 |
| TOTAL | 30 | 100.00 |
| MEAN | 4,623.33 | |



Table 8, shows the quantity sold for eggplant with the average of 4,616.67. The quantity sold is almost equal to the quantity harvested which implied that most of the farmers' productions were sold.

Table 8. Quantity sold

| VOLUME | FREQUENCY | PERCENTAGE |
|-----------------------|-----------|------------|
| 200 kg - 1,500 kg | 8 | 26.50 |
| 1,600 kg – 2,500 kg | 7 | 23.30 |
| 2,600 kg – 5,000 kg | 7 | 23.30 |
| 5,100 kg – 10,000 kg | 5 | 16.70 |
| 10,100 kg – 20,000 kg | 1 | 3.30 |
| 21,000 kg – 25,000kg | 2 | 6.70 |
| TOTAL | 30 | 100.00 |
| MEAN | 4,616.67 | |

Income

In terms of income, the respondents were asked to rate their income before using the hybrid seeds and after using the hybrid seeds using a scale of 1 to 10. One is the lowest and 10 is the highest. The average income rating of the farmers before and after using the hybrid variety in Caramutan and Piaza are shown in Table 9 and Figure 1 before and after using the hybrid variety.



Table 9. Farmers' average rating of their income before and after using hybrid seeds

| BARANGAY | RATING | |
|-----------|--------|-------|
| | BEFORE | AFTER |
| Caramutan | 3.6 | 7.80 |
| Piaz | 3.6 | 8.40 |

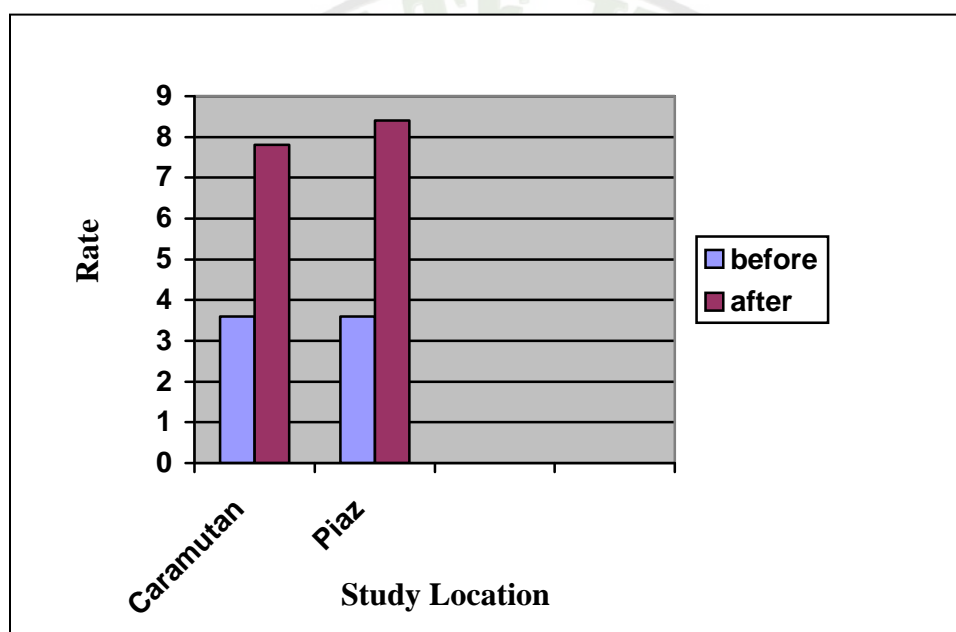


Figure1. Income rating before and after adoption of variety casino

Table 10, shows the sales for eggplant. About more than half of the numbers of the respondents has a sales ranging from 4,000 – 50,000 with 69.9%. On the other hand, there were only 1 respondent who has a sales ranging from 101,000 – 200,000 and from 201,000 – 250,000. Using hybrid seeds, the farmers have increased on the financial benefits and having the return for about 40-50% (Sayoc, 2005).



Table 10. Sales for eggplant

| SALES | FREQUENCY | PERCENTAGE |
|-------------------|-----------|------------|
| P 4,000 – 25,000 | 10 | 33.30 |
| 26,000 – 50,000 | 11 | 36.60 |
| 51,000 – 75,000 | 5 | 16.50 |
| 76,000 – 100,000 | 2 | 6.70 |
| 101,000-250,000 | 1 | 3.30 |
| 201,000 – 250,000 | 1 | 3.30 |
| TOTAL | 30 | 100.00 |
| MEAN | 48,471.67 | |

Table 11 presents the changes occurred for adoption of the hybrid seeds. These include the increased household income with 93.3% and purchased farm tools or equipments with 50%. Some farmers stated also that they paid their debts and sent their children in school.

Table 11. Changes occurred as a result of variety adoption

| CHANGES | FREQUENCY | PERCENTAGE |
|--------------------------------------|-----------|------------|
| Increased in household income | 28 | 93.30 |
| Purchased farm tools / Equipments | 15 | 50.00 |

* Multiple response



Cost and Return Analysis for 1,000 sq.m

Table 12 shows the average cost and return of 1,000 sq.m. eggplant production based on estimates of the respondents.

Table 12. Cost and return analysis for eggplant

| | PIAZ | CARAMUTAN | AVERAGE |
|------------------------------|-----------|-----------|------------|
| CASH COST | 4966.20 | 3459.80 | 4213 |
| Seeds / Planting materials | 118.87 | 178.80 | 148.835 |
| Fertilizers | 3484.00 | 2793.33 | 3138.665 |
| Pesticides | 296.67 | 142.00 | 219.335 |
| Hired Labor | 733.33 | 240.00 | 486.665 |
| Fuel and Oil | 333.33 | 105.67 | 219.5 |
| IMPUTED COST | 1,000.00 | 1,800.00 | 1,400.00 |
| Family labor | 1,000.00 | 1,800.00 | 1,400.00 |
| ALL COST | 5,966.20 | 5,259.80 | 5,613.00 |
| GROSS RETURNS | 14,000.00 | 11,633.33 | 12,816.665 |
| NET RETURNS | 8,033.80 | 6,373.53 | 7,203.665 |
| <i>Price per kg</i> | 7.89 | 13.33 | 10.61 |
| <i>Yield per 1,000 sq.m.</i> | 1,733.33 | 970.00 | 1,351.665 |
| <i>Cost per kg</i> | 3.39 | 5.42 | 4.405 |



Sources of Technology and Information

Table 13 shows the sources of technology and information related to eggplant production. The most common source of information of the farmers is the seed company technician (53.3%), followed by the market or agricultural supply stores (36.7%), and the DA-MAO (10%).

More than half of the total numbers of respondents get information from the seed company technician for they are knowledgeable enough in planting and harvesting test plots and in controlling weeds among growing crops.

Table 13. Sources of technology and information related to eggplant production

| SOURCES | FREQUENCY | PERCENTAGE |
|------------------------------|-----------|------------|
| Seed company technician | 16 | 53.30 |
| Market / Agricultural Supply | 11 | 36.70 |
| DA – MAO | 3 | 10.00 |
| TOTAL | 30 | 100.00 |

Production Problems Encountered by Casino Growers

Table 14 shows the problems encountered by the casino growers. Most of the respondents mentioned that low price is one of the major problem in eggplant production specifically hybrid casino variety with 56.7%, followed by the oversupply of eggplants due to shifting of some farmers from their native eggplant (domino, jackpot, decalb) to the adoption of new hybrid variety (casino), and other provinces & municipalities that produced eggplants, pushing prices down with 50.0%.



Table 14. Production problems encountered by casino growers

| PROBLEMS | FREQUENCY | PERCENTAGE |
|--|-----------|------------|
| Low price | 17 | 56.70 |
| Oversupply of eggplants / Competition | 15 | 50.00 |

* Multiple response



SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This study was conducted to identify the major hybrid eggplant producing barangays in Villasis, Pangasinan, estimate the total area cultivated and area devoted to eggplant production by the respondents, identify the improved technologies adopted by the farmers in eggplant production, and the production season for eggplant, determine the advantages of using new eggplant technologies in terms of: a) productivity, b) marketing, c) income, identify the sources of technology and information related to eggplant production, and find out production problems encountered by eggplant growers.

Thirty (30) eggplant growers from Piaze and Caramutan were interviewed using an interview schedule. The Municipal Agriculturist of Villasis, a technician from a seed company assigned in Villasis, and a barangay kagawad or councilman from Piaze were the key informants. Secondary data such as area planted, number of farmers, and other information was obtained from the Municipal Plan of the municipality.

The hybrid producing barangays were Piaze and Caramutan followed by Barangobong, Lipay, San Blas, Puelay, Bacag, Amamperez and Tombod, Lomboy, San Nicolas, and Capulaan.

The reasons that the farmers gave for adoption of the hybrid seeds, also referred in this study as the new technology were higher demand or marketability, and soil adaptability.

The impact of adopting the varieties on farmers' livelihoods and income was gauged by the increase in income that the farmers reported by using casino variety. The



impacts reported also by the farmers were that they were able to buy farm tools or equipments (hose, water pump, and tractor), paid their debts, and sent their children to school.

The production problem mentioned by the eggplant growers were low price and oversupply of eggplant or competition due to shifting of some farmers from their native eggplant (domino, jackpot, decalb) to the adoption of new hybrid variety (casino) causing low price.

Conclusions

Based on the findings, the following conclusions were made:

1. Adopting hybrid eggplant varieties increase the income of the farmers.
2. Credit availability is an important factor in the adoption of hybrid varieties.

Recommendations

Based on the conclusions, the following recommendations were made:

1. Production programming within the municipality and across municipalities or provinces has to be done in order to resolve the problem of oversupply due to simultaneous planting.
2. Financial institute like Bank should provide credits to the farmers at soft rate so that farmers / ordinary farmers can afford it.
3. Farmers' scientific orientation and scientific insight is found to be an important factor in determining the adoption of improved technology. Emphasis should be given in developing scientific mind and attitude to the adoption of hybrid technology.



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APPENDICES

Appendix A. Survey Questionnaire

A. Personal Data

Name of the Respondents: _____

Age: _____ Sex: () Male () Female

Civil Status: _____

Educational Attainment: _____

Address: _____

B. Household Information

B.1. Please describe the following information about your household

| Particulars | Male | Female |
|-------------------------------------|------|--------|
| No. of household members | | |
| No. of full time agricultural labor | | |

B.2 Please describe the source of your household income

| Income source | Total earning per year |
|----------------------------------|------------------------|
| Agriculture(including livestock) | |
| Non- agriculture | |

C. Farm Characteristics

C.1. Please provide the following details about your land holding (area in sq.m or ha)

| Land Category | Irrigated | Rain fed | Ownership | Total |
|---------------|-----------|----------|-----------|-------|
| | | | | |
| | | | | |

C.2. Details about land utilization and crop production for the last cropping year

| Crops | Area | Duration (month-month) | Production (kg) | Quantity sold | Sales |
|-------|------|------------------------|-----------------|---------------|-------|
| | | | | | |
| | | | | | |
| | | | | | |

D. Vegetable cultivation situation (on selected crop) and technology adoption

D.1. Since where you growing this crop in your field? If there was a change in variety from start to present, please mention timeline with respect to change in varieties overtime

| Time | Variety | Source | Reason for change | Reason for adoption |
|------|---------|--------|-------------------|---------------------|
| | | | | |
| | | | | |
| | | | | |



E. Inputs and irrigation

E.1. Please provides the following details on labor and input use during last season

| Activities | Own Labor | | Hired Labor | | Wage rate | Total cost |
|------------|-----------|--|-------------|--|-----------|------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Input use and cost

| Inputs | Amount used | Cost |
|--------------------------------|-------------|------|
| Seed | | |
| Chemical fertilizer | | |
| Pesticides | | |
| Herbicides | | |
| Hormones | | |
| Effective micro-organisms (EM) | | |
| Compost | | |
| Manure | | |
| Use of treading | | |
| Use of plastic mulch | | |
| Electricity on farm | | |
| Fertigation | | |
| Others (Please specify) | | |

E.2. What methods of watering do you use in farming?

| Irrigation type | Frequency of use (per time) | Cost (per time) |
|----------------------------|-----------------------------|-----------------|
| Sprinkler | | |
| Drip irrigation | | |
| Surface (irrigation canal) | | |
| Underground water | | |
| Others | | |

F. Market and other influencing factors

F.1. How much price do you get for your vegetable?

| | |
|------------------------|--|
| Minimum (P / kg) | |
| Maximum (P / kg) | |
| Average price (P / kg) | |

F.2. Do you get price information about vegetable in your area before planting and harvesting?

| | | |
|--|----------|-----------|
| | Yes / No | From whom |
|--|----------|-----------|



| | | |
|-------------------|--|--|
| Before planting | | |
| Before harvesting | | |

F.3. Please indicate your level of satisfaction with the current price of the vegetable seed and cost of improved seed

| Level of satisfaction | Vegetable Price | Seed cost |
|-------------------------|-----------------|-----------|
| Highly satisfied (5) | | |
| Satisfied (4) | | |
| Neutral (3) | | |
| Dissatisfied (2) | | |
| Highly Dissatisfied (1) | | |

G. Yield differences and changes due to variety adoption

G.1. How much yield (kg / ha) do you get from different varieties of seeds used?

| Variety | Yield |
|---------|-------|
| | |
| | |

G.2 Please rate your income from growing the crop before and after using the improved seed?

| Income | Score (1-10) |
|----------------------------|--------------|
| Before using improved seed | |
| After using improved seed | |

G.3. What major changes occurs as a result of variety adoption?

| Changes | Score (1-10) |
|------------------------------|--------------|
| 1. Increase income household | |
| | |
| | |

H. Problems and factors

H.1. Please describes the important problems you encountered from using improved seeds?

| Problems | Score (1-10) |
|----------|--------------|
| | |
| | |

H.2 What factors influenced your decision to adopt the hybrid crop variety?

| Factors | Score (1-10) |
|---------|--------------|
| | |
| | |

