

# DOCUMENTATION OF EXISTING BLACKPEPPER PRACTICES IN SELECTED MAJOR PRODUCING PROVINCES

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## ABSTRACT

A total of 75 farmer-respondents were interviewed from the provinces of Batangas (40), Laguna (10), Cotabato (18) and Negros Occidental (7) using prepared questionnaires.

Majority of the respondents followed all the cultural and management technologies for blackpepper production, except for the application of the right amount of fertilizer without the usual soil analysis. The amount of fertilizer applied is based only on the farmers' perception and correct proportion among various fertilizer available. In terms of labor intensiveness, Laguna lead with 178 man-days (MD) per year followed by Cotabato, Batangas and Negros Occidental with 156.3 MD, 153.2 MD and 113.6 MD per year on all operation, respectively.

The recommended distance of 2.5 x 2.5 were not followed because they make use of the limited space available.

The total production cost per hectare entails an actual amount ranging from P7,939.22 to P19,666.00. In Batangas, farmers spend about P15,321 - P19,666 per hectare; P13,606.70 - 14,236.70 for Cotabato farmers; P7,939.22 - 10,389.22 for Negros farmers and P 12,806.11 - 16,906 for Laguna farmers. For net return, Batangas farmers had a receipts of P9,756.37 - 96,974.99/ha; Laguna - P18,873.89 - 47,734.00/ha; Cotabato - P10,873.30 - 50,529.10/ha and Negros Occidental - P24,149.98 - 39,061.06/ha.

## INTRODUCTION

Blackpepper is considered as a high value crop and has big potential for export and could be an important source of revenue for the country. Thus, the production must be accelerated in order to cope up with the

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demand internationally and locally. The increasing demand in both foreign and domestic markets is a good sign in developing further the crop as source of additional income for farmers. While the crop is grown commercially in about eight provinces, the Philippines through the years has been a net importer of blackpepper. With the growth in population and the number of fast food centers in the country today, coupled with the increasing demand for its culinary and pharmaceutical uses, its domestic market appears promising.

Indeed, there is a tremendous success in some big and small plantations like in the provinces of Batangas, Negros, Basilan and Zamboanga.

To help blackpepper farmers in the country, documentation on the existing traditional practices had been carried out as a basis in modifying existing practices, or introducing new technology for a more effective utilization of our resources with the end view of increasing farm productivity and farmer's net income.

## OBJECTIVES

1. To assess existing plantation farms and farmers profile in the study areas.
2. To assess and identify the different cultural and management practices presently adopted by the farmers in blackpepper production.
3. To document different practices (traditional/new) of the farmers in blackpepper production from seedling establishment to harvesting.

## REVIEW OF LITERATURE

According to Tran Van Hoa (1974), lateral fruiting stems failed to root even when treated with four synthetic growth regulators namely IBA, NAA, Alar and Guercitin. However, lateral fruiting stem when planted with a slanted cut at the node became easy to root in as good as runner cuttings.



In contrast, runner cuttings rooted successfully with or without application of the four substances. This indicates that in addition to anatomical factors, other factors interact to induce adventitious root formation in blackpepper stem cuttings. Likewise, Tolentino in 1970 reported that 100 ppm of either GA and NAA significantly increased spike yield. Furthermore, the number of aborted peppercorns was reduced with GA. Thus, the size and weight of mature peppercorns had also increased.

In 1973, Raj found out that the application of fertilizer at the rate of 12 oz of Urea, 4 oz of double superphosphate and 16 oz of Muriate of Potash per vine per year on sandy soil had produced the highest yield. On heavy stiff clay, a fertilizer composed of the same amount of Urea and Muriate of Potash but at a higher amount of double super phosphate i.e. 8 oz produced the highest yield. In both type of soil, there were no significant interaction between N, P and K except between N and K. Increasing levels of N without corresponding increase in P decreased yield slightly. The highest yields were obtained with fertilizer combinations of 12 oz Urea, 24 oz Muriate of Potash, 20 oz Urea and 16 oz Muriate of Potash.

In India, (Anunciado, 1969) the practice considered for increasing the yield of blackpepper are as follows: nine kilos of rotten cattle manure applied in May; 500 grams of Ammonium Sulfate in July-August; 100 grams of KCL and 10,000 grams of Super Phosphate in October-November; and 500 grams of lime in April-May in alternate years.

Migvar in 1965, also reported that in Caroline Island, farmers used complete fertilizer (14-14-14). For the first year, one to two handfuls of fertilizers are dug on the soil near the roots. As the vine grow longer and bigger, more fertilizers are applied. As reported by Villapando in 1983, plants treated with 250 grams of complete fertilizer (14-14-14) gave the highest yield of 60.77 grams/tree followed by 750 grams and 500 grams of 14-14-14 with a mean yield of 29.2 and 24.1 grams/tree, respectively.

## METHODOLOGY

### Data Collection and Survey Design:

Primary data were obtained by documenting existing blackpepper farmer's practices through personal interview of farmers-respondents in the

study area using prepared questionnaires. Purposive sampling of farmers interviewed was accomplished through the help of Municipal Agricultural Officers and the Agricultural Technicians of the Department of Agriculture in the area of study.

Secondary data on related information such as area planted, volume of production and yield/hectare was obtained from the Bureau of Agricultural Statistics (BAS).

A total of 75 farmer-respondents were actually interviewed in the province of Batangas (40), Laguna (10), Cotabato (18) and Negros Occidental (7).

## OBSERVATIONS AND DISCUSSIONS

The total area planted to blackpepper in the Philippines from 1988-1991 is shown in Table 1. In 1991, a total of 576 hectares were planted to blackpepper at an annual growth rate of 9.7%. In the same period, the total volume of production also increased at an annual growth rate of 10.28% (Table 2). However, the yield per hectare obtained in 1991 is relatively lower than in 1989 with a decrease of 8.3% (Table 3). The erratic yield/ha as indicated strongly suggest that something is to be done in order to increase the yield per unit area in terms of technology dissemination/adoption.

TABLE I : BLACKPEPPER PRODUCING REGIONS BY AREA AREAS HARVESTED (Ha)

REGIONS	: 1988	: 1989	: 1990	: 1991 :
Cordillera	: 32	: 36	: 25	: 25 :
Ilocos Region	: 3	: 2	: 2	: 2 :
Southern Tagalog	: 241	: 246	: 301	: 278 :
Bicol	: 30	: 34	: 27	: 28 :
Western Visayas	: 14	: 16	: 20	: 19 :
Central Visayas	: 18	: 18	: 21	: 21 :
Western Mindanao	: 30	: 31	: 33	: 36 :
Northern Mindanao	: 4	: 6	: 6	: 5 :
Southern Mindanao	: 54	: 67	: 116	: 137 :
Central Mindanao	: 5	: 18	: 29	: 25 :
PHILIPPINES	: 441	: 476	: 580	: 576 :

Source: Bureau of Agricultural Statistics



TABLE 2 : VOLUME OF PRODUCTION BY REGION (MT)

REGIONS	1988	1989	1990	1991
Cordillera	2.7	1.7	1.1	1.1
Ilocos Region	127.5	148	165	187.6
Southern Tagalog	51.2	55.7	42	45
Bicol	9.4	9.4	10	9.5
Western Visayas	5	5.5	6.2	20.3
Central Visayas	17.5	18	18	16.5
Western Mindanao	3.2	4.2	3.7	3
Northern Mindanao	101.5	102.5	147	144
Southern Mindanao	14.2	18.1	28.6	17.4
Central Mindanao	332.1	363.1	421.6	444.4
PHILIPPINES				

Source: Bureau of Agricultural Statistics

TABLE 3 : YIELD PER HECTARE (KG) BY REGION

REGIONS	1988	1989	1990	1991
Cordillera				
Ilocos Region	883	825	550	560
Southern Tagalog	529	601	548	675
Bicol	1705	1639	1554	1608
Western Visayas	671	589	498	498
Central Visayas	278	306	295	964
Western Mindanao	583	581	545	458
Northern Mindanao	788	690	615	600
Southern Mindanao	180	1533	1268	1056
Central Mindanao	949	1004	987	697
PHILIPPINES	6566	7768	6860	7116
Average/ha	730	860	762	791

Source: Bureau of Agricultural Statistics

## GENERAL DESCRIPTION

## Demographic Characteristics:

Table 4 shows the general demographic characteristics of the respondent. Batangas blackpepper farmers are generally older at an average of 52 years of age and with a farm experience at an average of 21 years of which an average of 10 years were devoted to blackpepper growing. Negros Occidental farmers on the other had an average of 51 years of age, with an average of 17.2 years of farming experience, of which an average of 5.9 were also devoted in blackpepper growing. Cotabato farmers are younger

at an average of 50.9 years of age with an average of 16.09 years of farm experience of which an average of 6.6 years in blackpepper growing. Laguna farmers were the youngest at an average of 47.3 years but has the longest farm experience at an average 23 years of which an average of 10 years experience were devoted to blackpepper growing.

With regards to educational attainment, 28% of the total farmer respondents were college graduates and 47% were high school graduates and 25% were not able to pursue their studies (i.e high school/college) perhaps due to financial constraints.

In terms of involvement by the respondents to any farmers organization, 51.0% of the respondents were members and are aware of the value of having an organization within their municipality or province while 49.0% are not members in any form/type of organization.

Table 4 : General Characteristics of 75 Blackpepper Farmers from Batangas, Laguna, Davao and Negros Occidental

Characteristics	Batangas	%	Laguna	%	Cotabato	%	Neg. Occ.	%
No Reporting	40	53.33	10	13.33	18	24	7	9.33
Age	52		47.3		50.9		51	
Education :								
College		40		20		42.31		42.8
High School		60		80		57.69		57.2
Elementary								
Farm experience (Years)	21		23		16.09		17.2	
Years in Blackpepper Growing	10		10		6.6		5.9	
Household helping in the farm	2		1.5		2.4		3	
Membership Organization								
Farmers Organization	13		3		5			
Other Types of Organization	7				7		3	
Total no. of Members	20		3		12		3	
Non-members	20		7		6		4	
Availability of Credit								
No availing from formal source	13		1		2		5	
No availing from non-formal source								
Total members availing	13		1		2		5	
Did not avail credit	27		9		16		2	

The land tenureship in the study area (Table 5), showed that out of the 75 farmer-respondents, 90.6% were categorized as owner-operator, 6.7% were share tenant and 2.7% were lessee.

In terms of total farm size, 21.3% of the farmer-respondents operates less than 1.0 ha, 50.7% operates 1.0-5.0 ha, and 28.0% operates more than 5.0 ha. Out of the total farm size that the respondents are working on, 45.33% are working less than 1.0 ha purposely for blackpepper production, 46.67% are working 1.0-5.0 ha and 8.0% are working more than 5.0 ha for the same purpose. More specifically in the areas devoted to blackpepper, it was observed that 40% of Batangas farmers had less than a hectare, 50% had 1.0-5.0 ha and 10.0% had more than 5.0 ha. In Laguna, 60% of the farmer-respondents had less than a hectare, 30.0% had 1.0-5.0 hectare and 10.0% had more than 5 hectares. For Cotabato farmers, 38.88% had less than a hectare devoted to blackpepper growing, 55.56% had 1.0-5.0 hectares and 5.56% had more than 5.0 hectares planted to blackpepper. In Negros Occidental 71.43% devoted their time on less than 1.0 hectare blackpepper farm while 28.57% on 1.0-5.0 hectares farm.

TABLE 5 : FARM DESCRIPTION

Characteristics	Batangas	%	Laguna	%	Cotabato	%	Neg. Occ.	%	Total
Tenure									
Owner - Operator	36	90	8	80	17	94.4	7	100	90.8
Share - Tenant	3	7.5							8.7
Lease	1	2.5	2	20	1	5.6			2.7
TOTAL	40	100	10	100	18	100	7	100	100
Farm Size in ha									
<1.0	13	32.5	2	20			1	14.29	21.3
1.0 - 5.0	18	45	5	50	9	50	8	85.71	50.7
>5.0	9	22.5	3	30	9	50			28
TOTAL	40	100	10	100	18	100	7	100	100
Area devoted to Blackpepper									
<1.0	18	40	6	60	7	38.88	5	71.43	45.33
1.0 - 5.0	20	50	3	30	10	55.56	2	28.57	46.87
>5.0	4	10	1	10	1	5.56			8
TOTAL	40	100	10	100	18	100	7	100	100
Area devoted to Blackpepper									
<1.0	18	40	6	60	7	38.88	5	71.43	45.33
1.0 - 5.0	20	50	3	30	10	55.56	2	28.57	46.87
>5.0	4	10	1	10	1	5.56			8
TOTAL	40	100	10	100	18	100	7	100	100
Type of Cropping									
Blackpepper mono culture	4	10	2	20	3	17	1	14	13.3
Blackpepper with intercrops	36	90	8	80	15	83	6	86	86.7
TOTAL	40	100	10	100	18	100	7	100	100

## TECHNOLOGY DESCRIPTION

Table 6 presents the list of cultural and management practices and their application by the respondents to blackpepper production. These cultural and management practices were the results of the survey and were properly recorded and documented.

## Land Preparation:

Land preparation such as cleaning/underbrushing the area, holing, and providing support for the plants are necessary on blackpepper growing, since this crop is a climbing vine. Majority of the farmers (98%) used Madre de Cacao as climbing support either live or as dead wood post. The planted living supports during the onset of the rainy season. No elaborate land preparation was made such as plowing.

## Variety Planted:

Almost all the respondents had no knowledge on the specific variety they had planted. What they know is that they are growing several blackpepper strains e.g. Batangas strain, Laguna strain and others which were named after the location where they obtained the planting materials. This is so because no identified/registered variety yet had been made by the Philippine Seed Board.

## Seedling Selection:

Majority of the farmers interviewed used basal and terminal cuttings with 5-6 nodes as planting materials. Some farmers secured their planting materials free of charge from other blackpepper farmers. Others obtained from private nurseries in the locality.

## Planting:

Planting is best done at the onset of the rainy season to avoid watering problem. It was noted, however, that majority of the farmers did not follow



the recommended planting distance which is 2.5 m x 2.5 m each way. The planted at 1.0 m between rows and 1.0 m between hills. Others at 1.0 m x 1.5 m, 2.0 m x 2.0 m and 2.0 m x 2.5 m. Some had planted sporadically in any available spaces between other existing crops in their farm.

Planting blackpepper in an open field could be done in two schemes. One is surface planting and the other is trench or canal planting. In surface planting, one to three rooted cuttings are planted a few centimeters away from the base of each support post. Almost all the farmers interviewed followed this scheme of planting to avoid water-logged and easiness in the manual operation on the crop.

### Pruning of Blackpepper Plants:

All farmer-respondents interviewed in the four provinces practiced judicious pruning (i.e. removal of wayward branches, runners closed to the ground and nipping of selected terminal growth). Pruning unnecessary or wayward branches is necessary in order to give way for the production of more lateral branches close to main vine around the support. The other method of pruning is so called nipping (tip pruning). The tip and the subsequent terminal buds are nipped so that more branches will grow.

### Pruning of Support Tree:

There is a need to control the height of the main trunk of the support trees (i.e. when live support is used) because the plant keep on growing as long as it finds the space to cling on to. Almost all the respondents (954.7%) follow this kind of technology. The height of the live support trees (main trunk) were maintained about 6-9 feet to facilitate harvesting. Pruning of the support trees were done 2-3 times a year leaving only 2-3 branches per tree to provide shade to the crop.

**TABLE 6 :** Common Production Technologies as Practiced by farmer Respondents and their Application on Blackpepper Production

TECHNOLOGIES	PROVINCE											
	BATANGAS			LAGUNA			COTABATO			NEGROS OCC.		
	Applied (%)	Didn't Apply (%)	Total (%)	Applied (%)	Didn't Apply (%)	Total (%)	Applied (%)	Didn't Apply (%)	Total (%)	Applied (%)	Didn't Apply (%)	Total (%)
1. Land Preparation	100		100	100		100	100		100			100
2. Planting of Support trees	100		100	100		100	100		100			100
3. Seedling Selection	100		100	80		100	100		100			100
4. Appropriate planting distance		100	100		100	100		100	100			100
5. Appropriate Fertilizer applied		100	100		100	100		100	100			100
6. Irrigation	5	95	100		100	100		100	100			100
7. Pruning of vines (i.e. unproductive vines/runners)	100		100	100		100	100		100			100
8. Pruning of Support Trees	100		100	70	30	100	100		100			100
9. Cover cropping		100	100		100	100		100	100			100
10. Weed Control	100		100	100		100	100		100			100
11. Crop Protection	100		100	100		100	100		100			100
12. Intercropping	90	10	100	80	20	100	83.33	16.66	100	85.71	14.28	100

## Fertilizer Application:

As shown in Table 7, all the farmer-respondents had applied fertilizers on their blackpepper. It was observed, however, that 94.67 % used inorganic fertilizers, 1.33 % used organic fertilizer and 40% used the combination of inorganic and organic fertilizers. Fertilizers were applied in handful following the ring method applied around the perimeter of the plants. Some of the respondents pre-mix their fertilizers while others split their application and applied before and after the onset of the rainy season. The amount of fertilizers applied per plants are mainly determined by the farmers perception and correct proportion among the various fertilizers available.

Complete fertilizer (14-14-14) was the most popular in Batangas which accounts for the about 35% followed by the Ammonium Sulfate (21-0-0) 27.5% and combination of Ammonium Sulfate and Complete - 25% with a fertilizer cost of about P1,225 to P 5,570/ha. In Laguna, Ammonium Sulfate (21-0-0) and Complete fertilizer (14-14-14) were the most commonly applied with a total cost of P1,900 to P6,000/ha. In Cotabato and Negros Occidental, any available fertilizer was applied which ranges from P4,500 to 5,130/ha and P2,200 to P4,650/ha, respectively.

On the other hand, manure was applied either singly or in combination with any inorganic fertilizer by some farmer respondents. Although organic fertilizers/manures were cheaper and are excellent soil conditioner, it was observed however, that it was rarely used by the farmers for it accounts 94.67% of the total respondents in all four areas did not used organic fertilizer and only 5.33% used or followed the application of organic fertilizer and in combination with any inorganic fertilizer.

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TABLE 7 : Average Fertilizer Applied by Blackpepper Farmers Using Various Combinations

PROVINCE															
BATANGAS				LAGUNA				COTABATO				NEGROS OCC.			
Fertilizer Combination	No. Reporting	Rate : bags/ha	Yield/ha : (kgs)	No. Reporting	Rate : bags/ha	Yield/ha : (kgs)	No. Reporting	Rate : bags/ha	Yield/ha : (kgs)	No. Reporting	Rate : bags/ha	Yield/ha : (kgs)	No. Reporting	Rate : bags/ha	Yield/ha : (kgs)
1. AS	11	10	1,020.00										1	11	530.40
2. AS + Co	10	15	1,017.69	5	20	680	1	17	884.14				1	15	775.34
3. AS + Co + U	1	20	924.80				2	18	1,079.43				1	18	817.36
4. Co	14	15	1,294.86	2	20	808	1	22	912.56				1	10	584.40
5. AS + U							3	15	733.45				1	11	417.83
6. Co + U	1	18	1,289.14	1	20	748	10	23	888.03				1	15	705.84
7. Manure	1	35	278.39												
8. Manure + Co	1	17	554.88	1	15	494.4	1	20	408						
9. Urea	1	11	462.40	1	8	386							1	20	531.76
10. None															
TOTAL	40			10											

Where AS : Ammonium Sulfate

Co : Complete Fertilizer (14-14-14)

U : Urea



### Weed Control:

"Gamas" method of weeding is the most popular management practice being employed by majority of the respondents. The practice of weeding is very important so as to reduce competition for water and nutrients from the soil, oxygen and supply of light for better plant growth and higher yield.

### Crop Protection:

The most common insect pest of blackpepper that was encountered by the farmer-respondents were White Grub (*Leucipholis irrota*) and White Flies (*Bemisia myricae*). These pests however were control through the application of Furadan and Malathion at manufacturer's recommended rate of application, respectively.

The disease called "foot rot" caused by soil fungus *Phytophthora palmivora* was the only disease encountered by the farmer respondent particularly in Batangas. The application of soil fungicide (Redomil) for its effective control had been done by the farmers. However, it was denounced that they can not sustained the application of said chemical because of its high cost coupled with the increase in labor inputs which make them unable to prevent the spread of disease.

### Intercropping:

Perennial crops such as Lanzones and Jackfruits were the most common fruit crop found planted/mixed with blackpepper. These crops were planted without proper or specific planting pattern. Annual crops such as eggplant, hotpepper, tomato and other solanaceous crop were also being grown as entercrop in between rows of blackpepper during the first three years as source of additional income for the maintenance of the farm.

### Harvesting:

Blackpepper is ready for harvesting when the peppercorns turns cherry red. Another indication of maturity is when the peppercorns at the tip of the spikes could hardly be crushed between the thumb and forefingers. The farmer respondents were fully aware of these maturity indices. With all these maturity indicators, farmers start harvesting their peppercorns on a

daily basis or every other day. It takes them about a month to finish harvesting all the matured corns.

### Drying:

All the respondents sun-dried their fresh blackpepper corns before they are marketed using mats, tarpaulins and concrete pavement. They usually sun-dry their harvested peppercorns for about a day or two. It is also their usual practice to thresh and winnow the dried pepper corns to eliminate the dried stems and empty spikes prior to marketing and/or storage.

### Storage:

Majority of the respondents (85%) stored their produce using sack when the price is very low especially during the month of April. The rest (15%) sell their produce right after drying.

### Marketing:

Blackpepper produce by the farmer-respondent were marketed or distributed from farmer to wholesaler agent/wholesaler to retailer. The produced were picked up at the farmers house by the wholesaler. This method of distribution/marketing had made them spend less effort and money in bringing their produce to the market. In doing so, however, they always consider such factor as the buying and paying capability of the wholesale agent.

The price of blackpepper at farm level is determined primarily by the producers. Price canvassing and or monitoring at various marketing outlets in Metro Manila is being undertaken by the farmers prior to marketing. In this way, they are guided for better price.

## ECONOMIC EVALUATION

### Cost and Return Analysis for Blackpepper

Batangas farmers reported a total net income receipts of P9,756.37 to P96,974.99 per hectare.

TABLE 8 : Cost and Return Analysis for one hectare on Blackpepper

PROVINCE	PRODUCTION : COST	YIELD/Ha. (kg.)	FARM GATE PRICE/kg.	GROSS INCOME	NET INCOME
Batangas	P 15,321.00 : 19,666.00	279.39 : 129,486.00	P90.08	P 25,077.37 : 116,640.99	P9,756.37 : 96,974.99
Laguna	P 12,806.11 : 16,906.00	396 : 808	P80.00	P 31,680.00 : 64,640.00	P18,873.89 : 47,734.00
Negros Occidental	P 7,939.22 : 10,389.22	530.40 : 817.36	P60.50	P 32,089.20 : 49,450.28	P24,149.98 : 39,061.06
Cotabato	P 13,606.70 : 14,236.70	408 : 1,079.43	P60.00	P 24,480.00 : 64,765.80	P 10,873.30 : 50,529.10

The lowest receipt is attributed to the use of inorganic fertilizer alone. The highest receipt is due to the extensiveness of technology adoption being the pioneering province in blackpepper production.

Laguna farmers had a total net income of about P18,873.89 to P47,734 per hectare and Cotabato and Negros Occidental had a net income of P10,873.30 to P50,529.10 per hectare and P24,149.98 to P39,061.06 per hectare, respectively.

## TECHNICAL EVALUATION

### Fertilization:

None of the farmers interviewed know the importance of the regular soil analysis/leaf tissue analysis in order to determine the fertilizer need of blackpepper. By this, the right amount of fertilizer needed by the crop for better growth and higher yield is not established.

### Labor Requirements

In a hectare of bearing blackpepper plantation, 262 Man days (MD) are needed for all the farm operations from pruning of support trees to packing of harvested peppercorns.

Of the four provinces studied, Laguna lead in terms of labor intensiveness which requires about 178 MD/ha in a year. Cotabato requires 156.3 MD/ha in a year, while Batangas 153.2 MD/ha in a year. Almost all the respondents increased their labor requirements on harvesting and hauling operations.

## PROBLEMS USUALLY ENCOUNTERED BY THE FARMERS

1. No government subsidy on chemicals and fertilizers. Prices of these farm inputs is too costly.
2. Too much importation which caused the price of locally produced blackpepper to drop by as much as 40%.
3. Limited number of technicians knowledgeable on blackpepper husbandry.

## RECOMMENDATIONS

Blackpepper, being considered as one of the high value crops (HVC) is a very promising crop that can provide not only livelihood to farmers and their families but also revenue for the government. On the premise to sustain the production on a given area, it is recommended that vigorous effort on technology dissemination on the existing technologies on the part of the government through LGU's as well as NGO be intensified. Likewise vigorous research effort by the government be exerted along the line of varietal improvement as well as on the improvement of existing cultural management practices and post harvest. For policy makers, more considerable policy guidelines should be made in order to attain a more profitable venture. Problem like too much importation is slowly killing the infant industry.

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