BIBLIOGRAPHY

CABALQUINTO, BERNIE R. APRIL 2013. Post-harvest and Marketing Practices of Corn Producer's in Dilasag, Aurora, Province. Benguet State University, La Trinidad, Benguet

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ABSTRACT

The respondents were at their middle age, married and finished secondary education. The post-harvest practices used by the farmers in Dilasag, Aurora, Province included the following process: shelling, sun drying, piling and warehousing. In marketing practices, they sold their produce to the local markets located at town proper.

Problems that affect post-harvest included: natural calamities, lack of machine sheller, drying pavement, storage facilities, pest and diseases of corn grains and post-handling damages. The marketing problems included, poor farm-to-market road, lack of training/seminar related to corn production, lack of price information, and high cost of transportation.

Respondents chose to sell at a low price due to damage caused by natural calamities, used of chemicals to control the pest and diseases of corn grains, buy new seed from the buyer for the next cropping, storage of harvest at multi-purpose building of barangay and feed corn to domesticated animals due to post-harvest damages. And chose to wait for the price increase before selling, they use tractor to transport products, and sell their products to middlemen.

RESULT AND DISCUSSION

Table 1.Socio-economic profile of the respondents

Age.Thirty five percent were at the age bracket 49-54 years of age; twenty-five percent from 43-48 years; twenty three percent from 37-42 years of age; only five percent from 55 and above and 30 and below years old. This indicates that majority of the respondents were at their middle ages.

Gender. The respondents were males composed of (80%) it implies that farming activities are commonly done by males. and only (20%) were females.

Civil status. Seventy five percent of the respondents were married.

Educational Attainment. Most of the respondents (75%) had finished formal education. It implies that most respondents are literate.

Table 1. Socio-economic profile of the respondents

PARTICULARS	FREQUENCY	PERCENTAGE (%)
Age		
30 and below	3	5
31-36	4	7
37-42	14	23
43-48	15	25
49-54	21	35
55 and above	3	5
TOTAL	60	100

Table 1.continued …

GENDER		
Male	48	80
Female	12	20
TOTAL	60	100
CIVIL STATUS	FREQUENCY	PERCENTAGE (%)
Married	55	91
Single	4	7
Widow	1	2
TOTAL	60	100
EDUCATIONAL ATTAINMENT		
Secondary graduate	45	75
Undergraduate college	10	17
Elementary graduate	5	8
College graduate	3	5
Vocational	1	2
TOTAL	60	100
Note: Multiple responses		

Varieties of Corn planted by the Respondents

Majority of the respondents (83%) were planted NK8840Bt/Gt hybrid corn seed due to its high yield quality in terms of production, and its resistant from the corn pest, because it contains a GMO (Genetic Modified Organism) called Bacillus Thurengensis.

Most of the respondents (82%) were planting hybrid corn twice a year. It is during the month of July- December which is rainy season and at the month of February- June which is dry season and irrigation is needed.

Table 2. Corn varieties and number of cropping per year

PARTICULARS	FREQUENCY	PERCENTAGE (%)
NK8840Bt/Gt seed	50	83
Second generation see from NK8840 Bt/Gt	9	15
BPI var. 1 (orange yellow seed)	1	2
TOTAL	60	100
NUMBER OF CROPPING/YEAR		
Twice a year	49	82
Once a year	11	18
TOTAL	60	100

Post-harvest practices of the respondents

Shelling. Table 3 shows that most of the respondents (98%) were shelled the corn ear with the use of a machine sheller. It was noted, that the sheller machine could processed one hundred kilos per operation. This indicates that the time in labor and expenses would be minimized. Respondents preferred portable machine gasoline fuel powered, small in size and more economical. And some respondents use small hand tool it is a three inch nail in a wood and can shelled 100-150 kilogram of clean grains in eight hours but the amount that an individual can shell depends upon kernel depth, dryness of ears and size of ears.

Figure 2. Small hand sheller tool

Figure 3. Machine Sheller

Drying. The ninety two percent (92%) of the respondents dried their corn grains through sun drying within 1-3 days. They spread the corn grains in a basketball court in a concrete drying floors, road pavements and drying net/mats. But during rainy season

harvest, drying corn was particularly difficult costly and time consuming because higher moisture content required longer periods for drying so that (5%) of the respondents used natural ventilation to dry there product. Because most traders discourage farmers from selling wet corn because it losses income opportunity for its poor quality. And (2%) used mechanical dryer to dry there product. It is a built in facilities with machine, blower and bin where 20 sacks or less than 500 kilos can occupied by the machine dryer.

Figure 4. Mechanical Air Dryer

Moisture Content Determination. Eighty five percent of respondents claimed to use the shines appearance of the grains as basis to determine the right moisture content because they know if the corn grains are ready to sell.

Storage. Farmers usually store corn for a while before marketing. Corn is either stored as shelled corn, corn ear, or unhusked corn. Hundred percent store their corn shelled through piling of sacks inside the warehouses, storage room or in multipurpose hall of barangay and they considered the condition of the warehouses, the container used and

initial condition of the corn grains before storage a preventive measure to control pest and diseases.

Figure 5. Sample of stocking grains by piling of sacks

Packaging. Most of the respondents (85%) packed their corn grains in sacks. as it is by the required by the buyers. And it implies that a sack is more economical for them.

Packaging material used. The respondent (93%) use sacks to pack their corn grains. They believed that it maintains the good quality of the corn grains and to mitigate the pest and diseases problems.

Table 3. Post-harvest practices of the respondents

Shellling	FREQUENCY	PERCENTAGE (%)
Cylinder/machine sheller	59	98
Small tool	1	2
TOTAL	60	100
Drying		
Sun drying(1-3 days)	55	93
Mechanical dryer	2	3
Drying through natural ventilation	3	5
TOTAL	60	100
Storing		
Through piling of sacks Inside the warehouse/ storageroom	60	100
TOTAL	60	100
Packaging		
Per kilo/sack	51	85
Per can/sack	9	15
TOTAL	60	100
Packaging material used		
Sacks	56	93
Plastic bags	4	7
TOTAL	60	100

Marketing Practices of the Respondents

Basis of selling corn grains. Table 4 shows that Majority of the respondents (97%) sell their harvested corn grains as dried. As the farmers mentioned that to be safe from pest and diseases infestation during storage until it reaches the market.

Transporting of harvested corn grains/kernels from farm-to-market. Majority (73%) of respondents mentioned that they transported their corn grains by loading in a tractor because it is more accessible from their farm to nearby market.

Marketing Outlets/ channel of the Respondents. Majority (74%) of respondents claimed that they sold their corn grains harvest in the local market. Then the middleman buys it and sells the corn to the main buyers at the Dilasag, Aurora Province.

Quantity basis of selling their corn grains/kernels. Majority (88%) of the respondents mentioned that they sell their corn grains on per kilo, because it is better than per sack.

Table 4. Marketing practices of the respondent

Selling of corn grains/kernels basis (%)	FREQUENCY	PERCENTAGE
Sell in dried basis	58	97
Sell in fresh basis	2	3
TOTAL	60	100
Transporting from farm-to-market		
By loading in tractor	44	73
By loading in elf/forward vehicles	9	15
By loading in cart/calesa	7	12
TOTAL	60	100

Table 4. continued …

Marketing outlets/Channel (%) of the Respondents	FREQUENCY	PERCENTAGE
Middlemen/local buyers	44	73
Contract Buyer	16	27
TOTAL	60	100
Quantity basis in selling corn grains		
Per kilo	53	88
Per sacks	7	12
TOTAL	60	100

Post-harvest problems of the respondents

Table 5 shows that Most of the respondents (92%) claimed that the effect of natural calamities such as typhoon, flood and drought annually during cropping period. It affects the production and post-harvest processes, (87%) experienced the post-harvest handling losses of corn grains damages due to long storage. They claimed that it contributed to more or less 5% damages in post-harvest losses. Eighty three percent from the respondents also experienced the lack of planting materials for the next cropping such as new seed to be planted and other inputs. However; eighty percent experienced the lack of machine sheller. This problem is when the peak season of hybrid corn is harvested. Sixty five percent experienced the lack of drying pavement which is due to high volume of production to be dried during harvest season. Other respondents mentioned about problem of pest and diseases of corn grains during storage period so that it can cause of losses in their profit. And lastly they experienced the lack of storage facilities; as mentioned by the farmer's with

a small house where they don't have enough space for storage room for their products. It corroborates to Carlos *et al,* 1975, citing that in other areas the continuous production of corn affects marketing due to lack of drying, shelling machine and storage facilities. On this account, the farmers are forced to dispose of the products soon even at the very low or unfavorable price. The typing up of credits and marketing hampers the development of sound and meaningful marketing programs on the farm level. Undoubtedly under such condition, the farmers cannot control the marketing of their products.

Table 5. Post-harvest problems of the respondents

PARTICULARS	FREQUENCY	PERCENTAGE (%)
Natural calamities (typhoon, flood and drought)	55	92
Post-harvest handling damages	52	87
Lack of planting materials for the next cropping	50	83
Lack of machine sheller	48	80
Lack of drying pavement/panel	39	65
Pest and diseases of corn grains/kenels	34	57
Lack of storage facilities	27	45

Note: Multiple responses

Marketing problems of the respondents Table 6 shows that most (98%) of the respondents claimed that poor farm-to-market road is their main problems. They mentioned that it caused of additional inputs for them during market their products. Ninety seven percent of

the respondents mentioned about lack of technical trainings related to corn production. They experienced farm losses since they cannot reach their maximum output. However; eighty seven percent of the respondents claimed that during marketing they experienced the high cost of transportation. Eighty two percent of respondents claimed that they experienced problems on price information during marketing their product. They mentioned that they do not have channels to inquire for the current pricing of corn in the market. And seventy three percent claimed that they experienced the low price of corn in the market. It corroborates to Carlos *et al*, 1975 citing that problems of corn farmers in marketing of corn products was the lack of good farm-to-market roads. The lack of a price information network is another problems; this lack result to low sales, deprives the farmers of bargaining power because dealers, being container content conscious would tend to pay less to farmers than otherwise. They also found that existence of many middlemen in the marketing of corn contributed to increased marketing cost.

Table 6. Marketing Problems of the respondents

PARTICULARS	FREQUENCY	PERCENTAGE (%)
Poor farm-to-market road	59	98
Lack of training/seminars related to corn production	58	97
High cost of transportation	52	87
Lack of Price information	49	82
Low price in the market.	44	73

Noted: Multiple responses

Solutions Suggested by the Respondents to Problems Identified in Post-Harvest Practices

Solutions Suggested in Damage caused by natural calamities.

Most of the respondents (60%) are willing to sold at a low price due to damages caused by natural calamities; their reason is to pay back the expenses they incurred from planting to harvesting. Although (40%) from the respondents claimed that they are willing to use and pay air drying to minimized damages and losses. Their main reason is to maintain the quality of their harvest until it reaches the market.

Solutions Suggested to lack of machine sheller/cylinder. Most of the respondents (68%) preferred to stock the corns for a few days until drying pavement are available. And (32%) of the respondents are willing to hire corn sheller from the nearby barangay just to shell their corn immediately.

Solutions Suggested to lack of drying pavement/panel. Most of the respondents (87%) are preferred to stock the corn until such time that drying pavement are available. Others claimed that they borrow drying net/mats from their relatives and friends just to dry there corn grains immediately.

Solutions Suggested to Lack of storage facilities. Seventy seven percent of the respondents prefer t in their corn in the multi-purpose hall of barangay temporarily as long as it is allowed by the barangay officials. However; some respondents prefer to store their products temporarily from their relative's storage room.

Solution Suggested to pest and diseases of corn grains such as rodents, fungi and insects. Majority (92%) of the respondents preferred to use chemicals to control the problem. While only (8%) preferred to collect the damages manually.

Solutions Suggested to Post-harvest Handling Damages. Fifty eight percent of the respondents mentioned to use the corn damaged as feeds. They preferred to use feed it to animals as waste to mitigate losses. Although some respondents preferred to throw it away since they want to maintain the purity and quality of their corn products.

Solutions Suggested to Lack of planting materials for next cropping. Most of the respondents (82%) claimed that they buy seeds from the middlemen for their next cropping planting. They preferred to buy a new seed because they believed to have high yield. While some respondents are use the selected corn seed from their previous cropped. Their reason is when they tried the technique they found out that the performance is almost the same with the new seeds.

Table 7. Solution Suggested by the respondent to Problems identified in Post-harvest

Solutions to damage caused by natural calamities	FREQUENCY	PERCENTAGE (%)
Sell in a low price	36	60
Willing to used and pay Mechanical dryer to minimize losses	24	40
TOTAL	60	100
Solutions to Lack of machine sheller		
Wait for its availability	41	68
Willing to hire from the nearby barangay.	29	32
TOTAL	60	100

Table 7. continued …

Solutions to Lack of drying pavement		
Stocking for a few days until drying Pavement/panel is available.	52	87
Borrowing drying nets/mats from their Relatives/friends. / use of mechanical dryer	8	13
TOTAL	60	100
Solutions to Damages due to pest and diseases		
Using of chemicals for pest and diseases of corn grains/kernels.	48	80
Collecting it then throw away.	12	20
TOTAL	60	100
Solutions to lack of Planting material for next cropping		
Buying of seed from the buyer for next cropping	49	82
By using the selected seed from the previous crop(second generation seed)	11	18
TOTAL	60	100
Solutions to Lack of storage facilities		
Temporary stored in multi-purpose hall of Barangay if allowed by barangay officials	46	77
Temporary stored in relatives/ friends Storage room.	14	23
TOTAL	60	100

Table 7. continued …

Solutions to Post-handling Damage		
Used as feeds for own farm animals	35	58
Throw it away	25	42
TOTAL	60	100

Solutions suggested to problems identified in marketing. Table 8 shows the suggested and alternative solutions for the marketing problem;

Solutions to the low price in the market. Most of the respondents (78%) are willing to wait until price is increased before they sell their products. Their main reason is to gain even a small profit if they will wait for price increase. While, some respondents are willing to canvass or bid for the better price though they are not sure to find buyers to offer higher price.

Solutions to Poor farm-to-market road. Thirty three percent of the respondents are preferred to use tractor to transport their products to a nearby market. It is more accessible and economical for them. However; some respondents (27%) prefer to use motorcycle/tricycle to transport their product. And (20%) were using cart to transport their products to nearby market. They claimed that no expense can be used if they use their own carabao or cow to pull the cart.

Solutions to High cost of Transportation. Most (90%) of the respondents choose to sell their corn to middlemen. Their reason is to minimize expenses and time to sell in the market. They claimed that it is more economical on their part. And some respondents (10%) are chosen to hire vehicles to transport their products in the market. Their reason

was observed as they see actual scenario in marketing and to gain knowledge for their production practices.

Table 8. Suggested and Alternatives Solutions in Marketing Problems of the Respondents

Solution to low price in the market	FREQUENCY	PERCENTAGE (%)
Wait to increase the price	47	78
Canvass or bid for the better price	13	22
TOTAL	60	100
Solutions to Poor farm-to-market road		
Using of tractor to transport	22	36
Using a tricycle or motorcycle	16	27
Using a cart/ calesa	12	20
Using the farm animal like carabao, cow, horse to carry the sacks of corn.	10	17
TOTAL	60	100
Solution to high cost of transportation		
Direct contact buyer from farm to	54	90
Hired vehicle to transport their products	6	10
TOTAL	60	100

SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

The study on the Post-harvest and marketing practices of the corn producers in Dilasag, Aurora Province was conducted to determine the socio-economic profile of the respondents, to identify the different post-harvest and marketing practices of respondents, to determine the problems in the post-harvest and marketing practices and to identify the possible solutions in these problems.

Based on the data gathered majority of the respondents were in middle age, mostly were males, married and finished secondary education. The main variety of corn they are planting is the NK8840Bt/Gt corn for twice a year.

Majority of them were using machine sheller, they usually practice the traditional sun drying, and the shining appearance of the seed is the basis for obtaining the right moisture content before selling. They store the corn piling by sacks inside the warehouses/storage room. They usually packed their product in a sack to maintain its quality.

They sell their corn in a dried basis, and transport by loading in a tractor to nearby market. They sell their product in a local market found in town proper.

The problems they encountered from post-harvest were: natural calamities, lack of machine sheller, lack of drying pavement/panel and storage facilities, pest and diseases of corn grains/kernels-handling damages and lack of planting materials for next cropping.

In marketing problems the respondents. Mentioned about the poor farm-to-market road, lack of training/seminars on corn production, high cost of transportation and lack of price information were the common problems they encounter during marketing.

The suggested solutions to their problems they mentioned that they have to sell their products at low prices because they consider the risk due to damages caused by natural calamities. They stock their corn for a few days until machine sheller were available. Other stored their corn until such time that drying pavement will be available. Some of them used a temporary storage in barangay hall. They use chemicals to control pest and diseases damage were some practices they use in storage. Farmers with livestock use their corn damages as feed for their own animals. And buy new seeds from the buyer for the next cropping period.

For the suggested solutions for their problems in marketing, Majority were suggested that they are willing to wait for the increase in price in the market, before selling their corn. They used tractor to transport their products to a nearby market. And sell their corn to direct buyers instead of selling it to main market due to high cost transportation.

Conclusions:

Based on the findings, the following conclusions derived:

1. Majority of the farmers were males, mostly are in middle Ages, married and finished secondary education. Mostly they planted the NK8840Bt/Gt hybrid corn variety in twice a year;

2. Post-harvest and marketing practices of the respondents have innovative experience based on resources available at the farm;

3. In Dilasag, Aurora Province they have problems in post-harvest and marketing these are the following; natural calamities, lack of machine shellers, lack of drying panel, lack of storage facilities, and pest and diseases of corn grains/kernels. Marketing problems includes poor farm-to-market roads, lack of trainings/seminars related to corn production, and high cost of transportation; and,

4.They have their own innovations to solve their problems these are the following; used of chemicals to control damages, they buy new seed for the next cropping, store their products in their own houses and used as feeds for own domesticated animals. Marketing solutions include wait for the increase of price in the market, use tractor to transport and direct contact buyers as possible.

Recommendations

Based on the conclusions the following recommendations derived:

1. Corn farmers from Dilasag, Aurora Province should undergo trainings/ seminars related to corn production;

2. Corn farmers should be encouraged to learn the latest technology in post-harvest and marketing of corn;

3. Corn farmers should be encouraged to organize themselves into marketing cooperatives or associations to solved problems related to corn production without many expenses; and

4. Corn farmers should coordinate with government organization and non-government organization to help them solve existing problems.

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