

# Effect of the Modern Rice Harvesting Technology to The Livelihood of the Farm Workers in Select Barangays of an Independent City in Northern Luzon

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**Abstract:- Farming is still the most important and most common source of living in the world. With the advancement of technology, farming becomes easier and modernized but has affected many people who depend on agriculture. The aim of the study is to find out the impact of the introduction of the mechanized reaper on the livelihood of farm workers in selected barangays of Santiago City. The researchers made use of the descriptive phenomenological qualitative design using the interview and observation as data gathering tools. Farm workers who were not landowners from different select barangays were chosen as participants.**

**Results showed that technological innovations like the mechanized reaper has caused unemployment and migration among the participants thus leading to engagement on alternative livelihood endeavors like poultry and livestock production. The researchers recommended that a government agenda from the Department of Agriculture be created to generate sustainable opportunities to improve the economic well-being of the farm workers.**

**Keywords:- Mechanized Reaper, Farm Workers, Livelihood, Technological Innovations**

## I. INTRODUCTION

Farming is one of the world's most important source of livelihood (Sarma, 2017). Since time immemorial, farming was done in traditional methods until the introduction of technology in agriculture (Folnovic, 2016). Certainly there are many benefits to the introduction of technology to the farming industry but it has drastically affected labor and food production ([www.nationalgeographic.org/topics/impact-technology-agriculture](http://www.nationalgeographic.org/topics/impact-technology-agriculture)). There is however, growing concerns that technology would soon replace human labor which could be disadvantageous to the small scale farmers as well as farm workers who depended on manual labor for economic sustenance (Hilltop Acres Poult, 2017; Reid, 2011).

The Philippines is basically an agricultural country but its contribution to the Gross Domestic Product has decreased from 31.6% in 1974 to 9.65% in 2016 (17<sup>th</sup> Congress of the Republic of the Philippines, 2016). Most farm workers are not land owners and agriculture still holding 25-67% in providing employment ([www.agri.info/country/new-agriculturist](http://www.agri.info/country/new-agriculturist), 2016). In response to the clamor for more support from the government, the Department of Science and Technology introduced the mechanized transplanter and reaper that could help the farmers increased their production (DOST, 2016). There is however reluctance of the farmers in using these technologies introduced by the government because of loss of jobs or job displacements of the farm workers (Guilhoto, Mendonca-de Barros, Marjotta-Maistro & Istake, 2002). The reaper is more popular than the transplanter because of its multifunctional use of harvesting, threshing cleaning and bagging the harvested rice in one operation (Praweenwongwuthi, Laohasiriwong, Rambo, 2010; Medrano, Villanueva, Tindowen, 2016).

The mechanized reaper and other machineries were introduced mainly to reduced production cost, lessened harvesting time and ensure food security (Januarti, Junaidi & Rosana, 2018; Tolentino, 2016; Praweenwongwuthi, Laohasiriwong & Rambo, 2010). The promotion of these technologies has greatly affected areas, in their socio-economic status as well as in their cultural orientation on farming (Amrullah, & Astuti, 2017; Arida, Borley, Beltran, tanzo, Rlelado, Malsa & Antivo, 2015). Mostly affected of the introduction of the mechanized reaper and other machines for farming are those farm laborers and farm hands who are landless and basically dependent on the work provided by the landowners (Shah, Khandewal, Paudel, Justice, Biggs & McDonald, 2016).

Santiago City is an independent city in Cagayan Valley boasting of 37 barangays. It is a landlocked locality with mostly level plains bordered by two mountain ranges, the Sierra Madre on the east and the Cordillera on the west. In spite of its progressive urbanization, the city is still considered agricultural because farming remains the main livelihood of the people ([www.facebook/homepage/SantiagoCity](http://www.facebook/homepage/SantiagoCity)). Rice remains the staple crop of the residents followed

by corn and livestock (Department of Agriculture, rfo02.da.gov.ph). The current Mayor of the City has intensified agricultural support through many programs including enhancing the use of mechanical reaper to expedite harvesting especially during the rainy season when most of the farmers cannot dry their rice produce that leads to losses of income ([www.facebook.com/homepage/Santiago City](http://www.facebook.com/homepage/SantiagoCity)). In this regard, the researchers would like to find out the impact of the introduction of the mechanical reaper to livelihood of the farm workers of Santiago City in order for the farm workers to air their sentiments on this agricultural innovation.

## II. METHODOLOGY

### ➤ *Research Design*

The researchers made use of the qualitative phenomenological approach to find the impact of the introduction of the mechanized reaper on the livelihood of the

farm workers of an independent city in northern Philippines. According to Criswell (2013) studying the phenomenon (the introduction of the mechanized reaper) on how it influenced or affected the life of the people (impact on the livelihood) could lead to better understanding of the experiences of the individuals. This method could lead one to grasp the meaning of the experiences of those affected by the phenomenon in this case the use of mechanized reaper.

### ➤ *Research Setting and Participants*

The study was conducted in three (3) barangays where the mechanized reaper is already dominating the harvesting process of the rice farmers. The participants of the study were the farm workers who are not landowners and engaged mainly in farming for landowners. There were 16 respondents coming from the three (3) barangays. The table below shows the profile of the participants:

N=16	Frequency	Percentage
<b>SEX</b>		
Male	8	50%
Female	8	50%
<b>AGE</b>		
30 years & below	4	25%
31 – 40 years old	6	37.5%
41 – 50 years old	4	25%
51 years & above	2	12.5%
<b>BARANGAY</b>		
A	5	31.25%
B	6	37.5%
C	5	31.25%

Table 1:- Profile of the Participants

### ➤ *Data Gathering Tool*

The researchers made use of the interview and in-depth conversation with the participants supplemented by observations. The interview was done using the vernacular and daily language of the participants which is Ilocano. Before the interview proper, the demographic data of the respondents were gathered. There were three (3) stages of the interview: the first stage is the “getting to know” phase, wherein the assigned researcher introduced himself/herself to the target individual, explained the purpose of the visit including the conduct of the study. The second stage is the interview proper wherein the researcher gives and asked the questions in the interview guide and allows the respondents to give his story of the impact of the mechanized reaper on their livelihood. Notes and recordings were done so as not to miss anything that the participants has conveyed. The third stage is the confirmation stage wherein the interviewer relates and tells the participant of what has been said so as to avoid any misconception or injection of opinion from the researchers. Only after the participants has approved what has been said that the transcription of the interviews been done.

### ➤ *Data Gathering Procedure*

Before the study was conducted, a letter of request was sent to the Barangay Chairman. After approval, the Barangay Chairman identifies the possible participants of the study in his area of responsibility. The participants were visited in their homes and asked their consent to participate in the study. Only when the respondents voluntarily participated that they were included as respondents.

### ➤ *Data Analysis and Interpretation Method*

The use of “a-priori” coding was done to categorize the data collected. This process used commonly in qualitative design in order to put direction into the interview to be done and how the data be analyzed (Elliot, 2018; Morgan, 2017). There are two important codes used in the study of understanding the impact of the mechanized reaper: the positive and the negative impact. Classifying the responses in these two areas would lead into more detailed picture from the respondents. Responses related to the two general code will be classified depending on the frequency and percentages.

➤ *Ethical Considerations*

All responses and identity of the participants are strictly kept confidential. Participation is strictly voluntary and participants may drop out anytime during the course of the interview.

### III. RESULTS AND DISCUSSION

Based on literatures and articles reviewed by the researchers, the impact of the mechanized reaper on the livelihood were classified into two broad categories: positive and negative impact. Responses were placed under the two categories.

➤ *Negative Impact.*

13 or 82.7% of the respondents gave these responses and all males (8 of them) and 5 females. Most of the responses of the participants were under this category:

- The mechanized reaper lessened our daily income from the farm.
- When the reaper is not yet used, there are more work offered.
- Only the owner of the reaper gets rich.
- We need to go to other places to earn more.
- I get depressed thinking about how to raise my family.
- I need to find other forms of work, like construction.

➤ *Positive Impact*

3 of 17.3% of the respondents gave these responses, all were females. The following are considered to be the benefit from the reaper:

- Work is faster and easier.
- I could find time for other work to augment my income.
- I have to do better than others to be hired again.

➤ *Coping strategies*

Actions taken by farmers who were negatively affected by the introduction of the mechanized reaper were categorized into the following: migration to other places for employment, engagement with other forms of livelihood or change in vocation/career and improving their farming skills.

Migration to other places for employment (3 or 18.75% of respondents, 2 female and 1 male)

- My wife went to Hong Kong as domestic helper.
- My husband went to Manila as a construction worker.
- My daughter went to Vizcaya to become 'yaya'.

Engagement with other forms of livelihood (11 or 68.2% of respondents, 5 females and 6 males)

- We raise pigs and chickens to augment income.
- I went to work as house help of wealthy neighbors.
- I went on full time dressmaker/mechanic/repairman.

Improving their farming skills (2 or 12.5% of the respondents, 1 male and 1 female)

- Attended seminars on better farming and repair of farm equipment.
- Attended trainings on alternative farming livelihood programs for women (RIC).

The introduction of technology and machination of farming in the Philippines has the main objective – to achieve food security and sufficiency (Caliguiran, 2012; Amongo, Amongo & Larona, 2011). In the process most land owners benefited much from the introduction of these machines which increase productivity, reduction of working time in the field especially during rainy and typhoon season and reduction of farm capital (Shah, Khandelwal, Paudel, Justice, Biggs & McDonald, 2016; Khalequzzaman & Karmi, 2007). However, along with the advantages enjoyed by landowners, the mechanization, e.g. the mechanized reaper has displaced many farm workers and farm hands dependent on the manual labor from these lands for their livelihood (Januarti, JUnaidi & Rosana, 2018; Tolentino, 2016). These people who are now unemployed during harvest season must find another source of livelihood to sustain their family (Praweenwongwuthi, Laosiriwung & Rambo, 2010; Arida, Borley, Beltran, Tanzo, Relado, Malasa & Antivo, 2005). Technology and machines cannot all do the work that can be done by hand, the need for manual labor is still in demand (Medrano, Villanueva & Tindowen, 2016). In these areas of farming, there is big competition, and those skilled and those with training to do things like repair and trouble-shooting of problems of farm equipment and machines definitely gain advantage from those who do not (Emani, Almassi, Bakhoda & IssaKalanton, 2018; Tolentino, 2016).

With the displacement of most male farm workers, the female counterpart becomes a manpower resource in the rural areas (Masdek, 2015; SOFA Team & Doss, 2011). Loss of employment for most of the year, the farm hands and workers resort to other farming methods such as planting vegetables, livestock and hog raising, fishing and other forms of subsistence farming but all in the mercy of landowners and migration to the cities for employment (Hogan, Pinto da Cunha, 2001). With this plight of the landless farm workers, the government is now mandated to look into their condition. Assessment of the impact of these workers must be included in the attempt to achieve food security of the country (Shah, Khandelwal, Paudel, Justice, Biggs & McDonald, 2016; Khalequzzaman & Karim, 2007). Advantages of introduction of mechanization of farming is definitely felt among those with lands and capacity to use technology because of higher educational attainment (Poungchampu & Chantanop, 2016) but the government who implements modernization of farming must also look into the effects of this program among those who rely on manual labor as their source of income (Tolentino, 2016; Medrano, Villanueva & Tindowen, 2016). A program for alternative livelihood for displaces landless farmers must be created to achieve not only food sufficiency but also better socio-economic status for all citizens. Future researchers must look into the impact of mechanization among farmer landowners and the problems they face in relation to the displacement of farm workers and the resultant migration to other places to seek employment.

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