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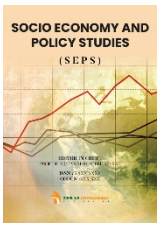

RESEARCH ARTICLE

IMPACT OF LOCKDOWN DUE TO COVID-19 ON VEGETABLES MARKET & GOVERNMENT POLICY FOR REVIVAL

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ABSTRACT

The study was carried out from May 10, 2020 to May 25, 2020 to find out the impact of lockdown due to COVID-19 on vegetables of Palpa district. For this, municipalities: Tansen and Bagnaskali which were under AKC, Palpa, were purposively selected. 60 respondents were selected by using simple random sampling method from the 500 farmers (population frame) to represent farmers of AKC command area. The household survey was carried out to collect information using a semi-structured interview schedule. The data were processed and analyzed by using Ms-excel and SPSS. The analysis showed that mainly Covid-19 impact on vegetable viz; cauliflower, cabbage, tomato and cucumber, during the lockdown. Lockdown affected both supply and demand channels. It also affects all elements of the production to the consumer that caused 42% loss due to COVID-19 in a short period which adversely effects their economy. The fluctuation of price was also vastly different which impact to wholesaler sells rate which was a decrease by around 55% in many crops via tomato, cauliflower, cabbage. Due to which consumer get vegetables at a cheaper price. The government launched agri-ambulance facility to link producer and consumer which was one of the quick and effective ways to sell the vegetable from farm to table. They also launched COVID-19 program for the people who came from abroad to increase people participation in agriculture.

KEYWORDS

Covid-19, lockdown, vegetable, simple random sampling

1. INTRODUCTION

On March 11, 2020, WHO has officially declared outburst of COVID_19 as a global pandemics (Marco Cascella, 2020,jul 4). This virus has hard hit developed countries of the third world including the United States, Brazil, India with maximum human loss. Globally all together 21.5M cases have been reported (Guardian, 2020). Out of these the death number reached to 771K and 13.4M populations have been recovered from COVID-19 (Wikipedia, COVID-19 pandemic, 2020)

In Wuhan, China, on December 31, 2019, the first cases of a new corona virus was reported which have generated the disease that is now known as COVID-19, which have peculiar differences from SARS-CoV and MERS-CoV. Since that time, the report of globally confirmed cases of infection with this new virus has had an alarming growth, now is the main global health problem, which is the severe acute respiratory syndrome transmitted through contact with an infected person by any means (WHO, 2020)

To avoid the harsh condition from this global pandemic, many nations ordered for complete lockdown. Lockdown, however, seemed to slowdown the rate of transmission but brings all economic activities to a grinding halt. This halt is affecting economy of many countries even the most developed countries like USA, UK, Italy, etc.

The COVID-19 pandemic has triggered an intense discussion about the vulnerability of the world's food systems and food supply chains. We know that the spread of the COVID-19 and government-imposed lockdowns and other restrictions have done due to which impacts on food supply chain and other too.

Nepal is at higher risk of economy blow off from this pandemic as it is still in the phase of recovery from 2015 earthquake and subsequent Indian blockade. Nepal is a developing country with export-import relation between neighbouring nations China and India. For Nepal, India is the largest source of import followed by China. The impact of this pandemic can be described in three round of impact. January was the month when the virus was spreading in China at a rapid pace. It brought about the first round of impact on Nepal. Nepal's manufacturing industries mostly rely on raw materials from China which brought the knock-on effects for Nepal as the supply of raw materials from China reduced drastically. The second round impact was seen in Nepal when the virus began to spread in India since most agricultural inputs like seeds, machinery and fertilizers are imported from India. The third impact is major impact seen after a lockdown in Nepal. To rein in the possible outbreak, a meeting of a high-level coordination committee was formed to combat COVID-19 under the leadership of Deputy Prime Minister and Defense Minister Ishwar Pokharel which decided to lock the whole nation down and the movement of the people is also restricted unless it's very important till further notice (post, 2020)

The contributions of different sectors of Nepal in national GDP are Agriculture, tourism, service sector and Remittance. Agriculture which is the major occupation of Nepalese, contributes nearly 26.98% to national GDP and about 66 % of the economically active population involved in this sector ((MOALD, 2019). The subsistent Farming system is adopted and crops are integrated with livestock where commercialization hasn't flourished yet. Diverse climatic condition from tropical to temperate region provides topographical variation and ecological variation that create the scope of farming.

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The lockdown of rural and urban areas as the first initiative taken to slow down the pace of transmission of Covid-19 contributes to affect agriculture sector, affecting the national GDP as a result national economy has fluctuated so, this created widespread concerns in Nepal too. Along with lockdown, various places like malls, retail shops, markets where crowding is possible are also shut down causing difficulty for farmers to sale their products. Thus, the major impacts of lockdown in the agriculture sector are agriculture demand and supply chain, import from China and India, financial support to farmers by government and less food more mouth. So, this study aims to assess the impact of lockdown on various levels from producers to consumers in Palpa. Palpa is one of the major vegetable producing district of Nepal which is linked by Siddhartha highway to two major agricultural hubs of Nepal with i.e. Butwal at south and Pokhara at North (Wikipedia, 2020). The area and production of vegetable in Palpa in the year 2074/75 was 2,073 ha and 33,165 mt respectively which increase to 2,127 ha and 34,163 mt in 2075/76 (AKC, 2076). In Palpa, Local markets have remained closed with lockdown and vegetables have started rotting in the field. In Palpa, Farmers growing highly perishable products due to which maximum loss is seen in the vegetable. Some farmers had carried vegetables in wicker baskets to the market due to constrained in transportation.

1.1 Status of pandemic till now

Since, the population of human is increasing exponentially, so have infectious diseases spread across the world. Even though the outbreaks are nearly constant, but not every outbreak reaches pandemic level as COVID-19 has reached in recent time.

Here are some of the major pandemics that have occurred over time:

Table 1: History of pandemic

Name	Time period	Type	Death
Antoine Plague	165-180	Believe to be either smallpox or measles	5M
Japanese smallpox epidemic	735-737	Variola major virus	1M
Plague of Justinian	541-542	Yersinia pestis bacteria/rats, fleas	30-50M
Black Death	1347-1357	Yersinia pestis bacteria/rats, fleas	200M
New world smallpox outbreak	1520-till now	Variola major virus	56M
Great plague of London	1665	Yersinia pestis bacteria/rats, fleas	100,000
Italin plague	1629-1631	Yersinia pestis bacteria/rats, fleas	1M
Cholera Pandemics 1-6	1817-1923	Cholerae bacteria	1M+
Third Plague	1885	Yersinia pestis bacteria/rats, fleas	12M
Yellow Fever	Late 1800s	Virus/Mosquitoes	100,000-150,000
Russian flu	1889-1890	Belived to be H2N2	1M
Spanish Flu	1918-1919	H1N1 virus	40-50M
Asian Flu	1957-1958	H2N2 virus	1.1M
Hong kong flu	1968-1970	H3N2 virus	1M
HIV/AIDS	1981-present	Virus/Chimpanzees	25-35M
Swine Flu	2009-2010	H1N1 virus/pigs	200,000
SARS	2002-2003	Corona virus/Bats	770
Ebola	2014-2016	Ebola virus/wild animals	11,000
MERS	2015-Present	Corona virus/Bats, Camels	850
COVID-19	2019-August-15-2020	Coronavirus/Unknown	771K

Source: History of pandemic (LePan, 2020)

Despite the persistence of disease and pandemics throughout history, there's one consistent trend over time. A gradual reduction in the death rate because of improvement in health care and understanding the factors that incubate pandemics have been powerful tools in mitigating their impact.

1.2 Status of covid-19 in world:

The COVID-19 pandemic is caused by severe acute respiratory syndrome (SARS) which was the first outbreak in Wuhan, China then spread into world. At the time of writing, 21.5M confirmed case of COVID-19 across the globe and 771K was death till now. (Roser, 2020,june 30).In Nepal, 26,500 confirmed case of COVID-19 and 101 were death till August 15 (WHO, COVID-19 Pandamic Case in World, 2020)

1.3 Overview of Covid-19 in world:

In **China**, the Peoples Bank of China introduced a 500 billion Chinese Yuan (RMB) expansion of re-lending and re-discounting facilities at low-interest rates to support MSME's. The re-lending rate for rural areas, agriculture, farmers and smaller businesses was lowered to 2.5 per cent as well. To promote food security, the Ministry of Agriculture and Rural Affairs released several notes to support the resumption of operation in feed, slaughtering and meat processing enterprises as well as recommendations for field management of crops and measures to eliminate labour shortages. Several local policies benefit the agricultural workforce such as the temporary living allowance subsidies of 300 RMB for rural workers in Hubei province and the 3000 RMB cash transfer for migrant population retention in Wuhan (Ugo Gentilini, April3,2020)

In **Fiji**, an agriculture response package includes a new farm support package to support farmer through the distribution of materials and seed.(Deo, 19/03/2020)

In **Germany**, the Government has temporarily extended the "70-day rule" for seasonal farm workers, who may now work up to 115 days until the end of October 2020 without paying social security contributions. It has raised additional income limits for temporary work compensation and for farmers' pensions. Paid sick leave has also been adjusted so that, where the Infection Protection Act applies, the amount received is equal to the worker's net wage for the first six weeks, and is then equal to sick leave benefit.(Schulz, 25-03-2020)

In **India**, the cultivators and related professionals lost their income while some face the wrath of unemployment. Accordingly, small and marginal farmers, landless farm laborers, SMEs dependent on raw materials from agriculture and soon experience extreme challenges. Thus the government is striving to provide alternative revenue until the economy falls back into its place.(Bindhu, April 21,2020). Wholesale prices of fruits, vegetables, wheat, rice, pulses and sugar have fallen up to 75% since the start of the nationwide lockdown due to subdued demand, particularly from wholesalers in other states, restaurants and institutions, traders have said.

The prices are likely to remain weak till mid-June, industry insiders said, citing continued transportation issues with many state borders sealed, preventing traders from travelling to other states to make wholesale purchases. (Bhosale, may 22,2020)
In the **Philippines**, a Philippine peso (PHP) 27.1 billion fiscal package includes social protection for the most vulnerable workers and support for badly affected sectors, such as tourism and agriculture. Under the Emergency Subsidy Programmed, 18 million low-income households working in the informal economy will be provided with PHP 5,000 to 8,000 a month for two months. The Overseas Workers Welfare Administration has also provided cash aid to overseas Filipino workers affected by travel bans.(Manuel M.dayrit, March 24, 2020)

1.4 Status of Agriculture in Nepal:

Agriculture is the main source of food, income and employment for the majority of population with 66% of the economically active population involved in agriculture. Moreover, cereals accounts for 49.91%, livestock 25.68%, vegetables 9.71%, forestry 8.01%, fruit and spices 7.04% of the total Agricultural GDP (MoAD, 2014). Nepal is geographically divided into 3 regions viz. Mountains, Hills and plain land called as Terai extended at the north latitude between 26°22′ and 30°27′ and the east longitude between 80°04′ and 88°12′.

1.5 Status of Vegetable in Nepal:

Since 1991/92, the production of vegetables is increasing at faster rate than increment in area. This is because of favourable climatic condition, availability of improved seed and fertilizers, mechanization in vegetables farming along with area expansion. The percentage increase in area, production and productivity of vegetables in 2015/16 compared to 1991 is 100%, 248% and 74% respectively. Production of vegetable was

increased with 118043 mt per year while area was increased with 6160.8ha per year and productivity of vegetable was increased with 11.09 mt/ha per year from 1991 to 2015/16. (Gobinda Pandey, 20 th October 2017). Vegetable is one of the most important agriculture sector and contributes about 9.71% to the AGDP(MoAD, 2014). Out of two hundred cultivated vegetable species and their varieties in Nepal, fifty are grown in commercial scale (Shrestha, Ghimire, Gurung, & Lal, 2004). Vegetables have higher commercialization rate and about two times higher B:C ratio than cereals (Bhandari, Bhattarai, & Aryal, 2015). Vegetables are emerging out as good means of strengthening economy of farmers and uplifting their livelihood.

Tomato, Cauliflower, Cabbage and Cucumber are the main crops which farmers love to grow in their field due to low investment with high return in short period than other. They can easily grow in off-season and get a high price while selling the commodity.

1.6 Overview of lockdown in Nepal:

As a response to the spread of the novel coronavirus (COVID-19) around the world, the Government of Nepal (GoN) ordered a national lockdown from the 24th of March, urging people to stay at home and closing schools while restricting the operation of businesses and markets. The lockdown has since been extended through May 7th. While the restrictions on movement and activity in Nepal may be exacerbating food security issues across the country, they are steps designed to slow the spread of COVID-19, and to mitigate potentially devastating economic and social effects in Nepal, and reflect measures taken by most countries (Regmi R. K., 2020).

In Bhojpur, Vegetable farmers in Bhojpur have been badly affected by the lockdown implemented against corona virus pandemic. They have found no way to transporting the produces to the market. Gita Bista of Bhojpur municipality-5 said she was feeding the vegetables she has grown up to animals for lack of market. Farmers here have produced cauliflower, cabbage, potatoes and other green vegetables in the farm which they used to supply in the local markets twice a week: Saturday and Wednesday. As their source of income has stopped with a halt of vegetables supplies due to lockdown, they are facing problems for a livelihood (Nepal, Lockdown Impact On Bhojpur's Vegetable, 20 April,2020)

In **Kathmandu,** Vegetable prices dropped by half as the peak production season got underway, keeping markets fully stocked with fresh produce. Traders said wholesale prices at the Kalimati Fruits and Vegetable Market had gone down by more than 50 percent due to the surge in supply. Most seasonal vegetables cost around Rs20 per kg. Tomato small, cauliflower local, bitter gourd, pointed gourd, snake gourd, pumpkin, okra, eggplant and leafy greens have all become cheaper. Vegetables like potato red and white, cabbage, cow pea long and French bean (long and hybrid) cost from Rs10 to Rs30 per kg (Prasain, June 3, 2020)

In **Baglung,** The local government decided to sort out complaints of vegetable and fruits suppliers whose business has been affected by the coronavirus lockdown. So, Municipality Mayor Janak Raj Poudel said the district's production was enough to meet the internal demand and there was no need to import vegetables and fruits outside from the district and suppliers are allowed to open shops from 7:00am to10:00am in the morning and 4:00 to 8:00 pm in the evening (RSS, 2020).

2. Materials and Methods

2.1 Site selection

Palpa lies in between 27° 82′N latitude and 83° 63′ E longitude with tropical climate all over the district. The study was conducted at Tansen and Bagnaskali s under Tansen municipality which was selected purposively as AKC, Palpa. 60 sample farmers were selected by using simple random sampling method from 500 farmers (population frame).

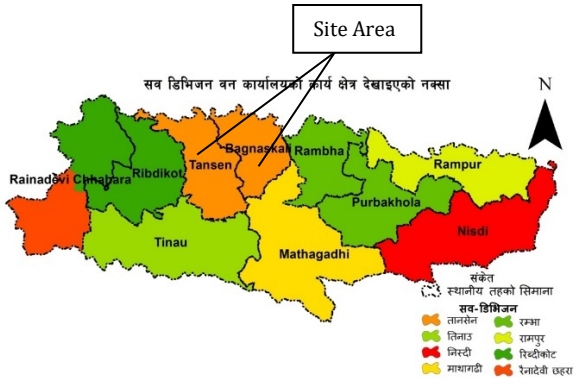

Figure 1: Study site

2.2 Preliminary study

Preliminary study was carried out to collect different information regarding the feasibility of the research. It provided an overview of vegetable block from different aspects which would be helpful in the preparation of questionnaire.

2.3 Sampling population Sample size and sampling procedure

Vegetable growers of three farmer's group of these villages which were selected for the PMAMP Vegetable Block program were the target population for the study. Tansen and Bagnaskali under Vegetable block were purposively selected. Sixty households including thirty each from Tansen and Bagnaskali were randomly selected from the population frame of 500 farmers and surveyed with semi-structured and pre-tested interview schedule.

2.4 Research instruments

2.4.1 Interview schedule

The interview schedule was prepared in English language and the questions asked were asked in Nepali language. The questions were prepared in accordance with the specific objectives of the study prepared in a simple English language.

2.4.2 Pre-testing of interview schedule

Pre-testing was done to test the validity and effectiveness of the interview schedule. For this, the interview schedule was tested with 10 respondents of Tansen 7 more or less similar and near to the study area. The interview schedule was modified as per the result of pre-testing before actually applying it with real respondents.

2.4.3 Household survey

The structured and pre-tested interview schedule was used to collect data through household survey. Sixty households including thirty from each Tansen and Bagnaskali village under Tansen municipality AKC palpa were surveyed.

2.4.4 Key informants interview (KII)

Key informant Interview was done with the progressive farmers, DADO officers and other beneficiaries to obtain the key information. For this, a separate checklist was used.

2.4.5 Focus group discussion

Two FGDs was carried out each in Tansen 19 and Bagnasskali 7 wards to know the knowledge and perception of the farmers on their management.

2.5 Sources of data

2.5.1 Primary data

Primary data was collected by the direct interaction with farmer through interview schedule FGDs and KII.

2.5.2 Secondary data

Secondary data was obtained through detail review of literature relevant to the research topic. It included annual DADO reports, journals, articles, NARC publications, MoAD publications, PMAMP reports and relevant books.

2.6 Data analysis

Quantitative and qualitative data obtained from survey was analyzed and interpreted by using SPSS and MS-excel. The results were presented using mean, standard deviation, frequency, percentage, bar diagrams and pie charts.

3. Results and Discussion:

3.1 Socio-demographic characteristics of the respondent

This section provides socio-demographic characteristics of the respondents such as sex, age, religion, ethnicity, family type, sex distribution of the respondent family members, education level, major occupation and farm characteristics.

3.1.1 Sex

Table 1 reveals that 65 percent of the respondents surveyed were male and 35 percent respondent was female.

Table 1: Distribution of respondents by sex in study area (2020)

Sex	Frequency
Male	39(65%)
Female	21(35%)
Total	60(100%)

Note: Figures in parentheses indicate percentage

3.1.2 Age

The age of the respondents was categorized into three groups as presented in table 4. Majority of the respondents (65 percent) in the study area were in between 39 to 65 years followed by above 65 years (20 percent) and below 39 years (15 percent).

Table 2: Distribution of respondents by age group in study area (2020)

Age Category (years)	Frequency
Below 39	13(21.67%)
39 to 65	44(73.33%)
Above 65	3(5%)
Mean	46.80
Standard deviation	9.54

Note: Figures in the parenthesis indicate percentage

3.1.3 Religion

Two types of religion were found in the study area. Table 3 reveals that Hindu religion (83.33 percent) was dominant followed by Buddhism religion (16.67 percent).

Table 3: Distribution of respondents by religion in study area (2020)

Religion	Frequency
Hindu	50(83.33%)
Buddhism	10(16.67%)
Total	60(100)

Note: Figure in the parenthesis indicate percentage

3.1.4 Caste/Ethnicity

The study revealed that majority of the respondents (40 percent) were Brahmin followed by Chhetri (41.67 percent), Janjati (16.7 percent) and dalit (1.7 percent).

Table 4: Distribution of respondents by ethnicity in study area (2020)

Caste/Ethnicity	Frequency
Brahmin	24(40%)
Chhetri	25(41.67%)
Janjati	10(16.7%)
Dalit	1(1.7%)
Total	60(100)

Note: Figures in parenthesis indicate percentage

3.1.5 Distribution of family member by sex

Table 5 reveals that the numbers of female in household of respondents were slightly higher than male with 58.4 and 41.6 percent respectively of the total household members.

Table 5: Distribution of respondent family member by sex in study area (2020)

Sex	Frequency
Total male	180(58.4%)
Total female	128(41.6%)
Total	308(100%)

Note: Figures in parentheses indicate percentage

3.1.6 Family type

The study revealed that majority of the respondents (58.33 percent) in the study area was in nuclear family followed by joint family (41.67 percent).

Table 6: Distribution of respondents by family type in study area (2020)

Family type	Frequency
Nuclear	35(58.33)
Joint	25(41.67)
Total	60(100)

Note: Figures in parenthesis indicate percentage

3.1.7 Education level

Table 7 reveals that majority of respondents (16.66 percent) were literate who could at least write their name by themselves followed by primary level education (31.66 percent), secondary level education (38.34 percent) and few (13.34 percent) acquired University level education.

Table 7: Distribution of respondents by education level in study area (2020)

Education level	Frequency
Illiterate	10(16.66%)
Primary level	19((31.66%)
Secondary level	23((38.34%)
University level	8(13.34%)
Total	60(100)

Note: Figures in parentheses indicate percentage

3.1.8 Occupation

The major occupation of all the respondents (100 percent) was found to be agriculture. Table 8 revealed that the alternative occupation of the respondents of the study site was agriculture (51.7 percent) followed by foreign job (25 percent) followed by Business (13.33%) and service (6 percent).

Table 8: Distribution of respondents by occupation in study area (2020)

Occupation	Frequency
Agriculture	31(51.7%)
Business	8(13.33%)
Service	6(10%)
Foreign job	15(25%)
Total	60(100)

Note: Figures in parentheses indicate percentage

3.2 Major Vegetable grown in study area:

Of the total area of Vegetable cultivation, Cauliflower were grown by more people (100%) followed by Cabbage(91.7%), followed by Tomato (75%), Cucumber(66.7%), Bean(51,7%), Chilly(35%), Potato(13.3%) and Bitter ground(10%).

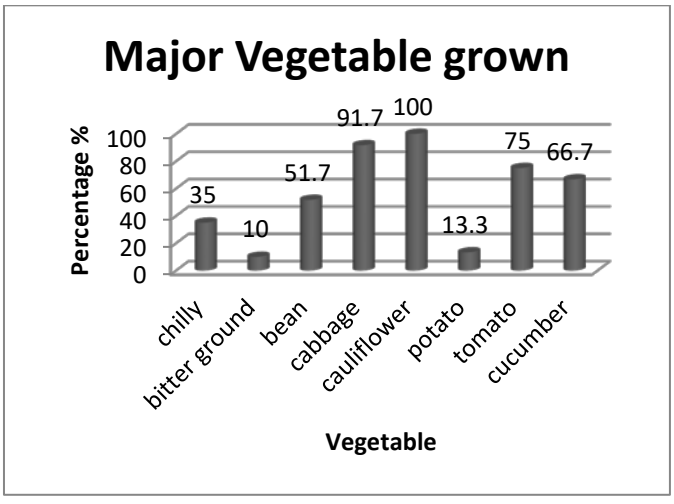

Figure 2: Major Vegetable grown in Palpa

3.3 Impacts on vegetable Framing and their supply chain:

During the lockdown tenure resulted from ongoing Covid-19 pandemic, the agriculture sector is the majorly affected area among other sectors which are highly perishable due to halted transportations and market unavailability. Rabi (October-March) and Kharif (June-October) are the peak seasons for harvesting and sowing. Around 65% crops are harvested during this period which coincided with the complete lockdown causing further losses to the producers. As well the markets are opening sporadically impacting the producers, traders and sellers. This shows the heavy fluctuation in the supply chain and food security. More than 3 million peoples are returning to their native land from abroad which further shattered the food security due to increasing mouth to food ratio. Along with that, many households are dependent on earnings from foreign employment that further damaged the economy per household. Agriculture and foreign employment contribute largely to the national GDP resulting in chances of a national economic crisis.

3.3.1 Some major potential impacts currently been faced are:

3.3.1.1 Supply chain:

A supply chain is a network between a company and its suppliers to produce which distribute a specific product to the final buyer. The elements of supply chain in agriculture sector are: Producer, Vendors and consumers.

Producers: Producers are the most vulnerable group among the supply chain. Producers are simply the one who produces such as farmers, peasants, etc. Impact on this group can be described on the following basis:

A. Farm inputs- Nepal is the large importer of farm inputs from India and China. Seeds, fertilizers, pesticides are the basis criteria for the cultivation and so is the majorly imported inputs. Since the global pandemic hit hard to both these countries it has an impact on importing of these inputs in Nepal, resulting in shortages. Prices of import inputs to vegetable production like improved seeds, fertilizer, fungicides and insecticides are increasing due to shortages. So, Local Government should invest in seed production then depend on international company for seeds. Farmer should focus on local seeds, Bio-fertilizer and IPM.

B. Labor availability- A second emerging issue concerns in case of producers is labor availability in the agriculture sector. Labor has been suddenly restricted in many regions due to quarantine measures such as social distancing; loss of workforce from COVID-19 deaths and serious illness. This seems particularly severe in horticulture especially planting and harvesting of crops that is relatively labor-intensive as the timing of labor needs cannot be compromised. From this, we know that Mechanization is one of the most important parts in vegetable in the coming days. This can help in productivity, time-saving and cultivate off-season vegetable.

C. Production- In March/April, mainly maize is sown and harvesting of Rabi crops is done. Mainly selling was the main problem forms them that problem was also solve from AKC although loss occur. Since the harvesting period of these crops fell during lockdown the vegetable farmers of Palpa had to bear the heavy loss of the produced vegetables i.e. 42% loss. Losses are: Cauliflower (9%), Cabbage (21%), Tomato (22%) and Cucumber (48%).

In Palpa district, agriculture is one of the major occupation i.e. 59.5% of contribution is there from agriculture income out of total income and among agriculture, contribution of income from vegetable farming is 83.16%.

Major vegetable crops of survey area are Cauliflower (31.6%), Cabbage (28.4%), Cucumber (18.4%) and Tomato (21.6%) as shown in table below.

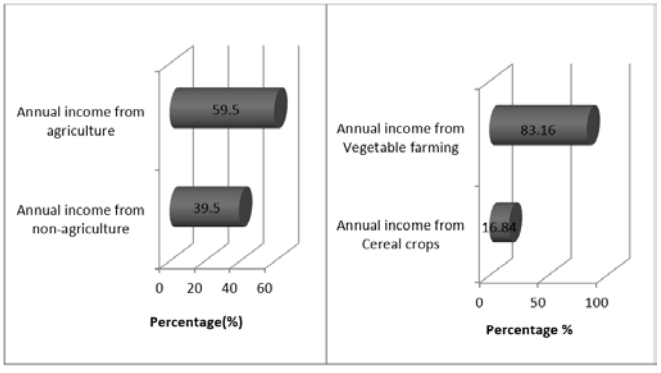

Figure 3: Annual income from Agriculture in Percentage.

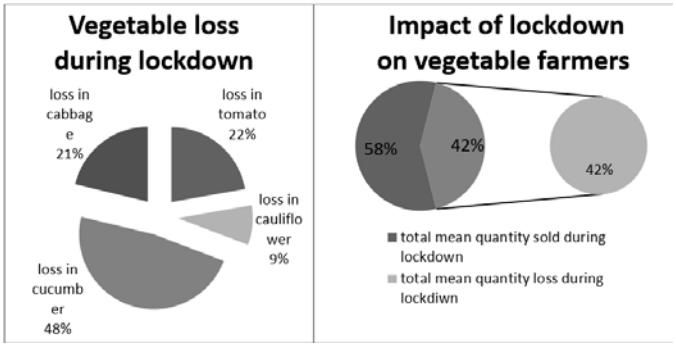

Figure 4: Vegetable loss during lockdown

Table 9: Major vegetable sold during lockdown

		Percent
Major produced/sold vegetables in palpa	Vegetable sold_tomato	21.6%
	Vegetable sold_cauliflower	31.6%
	Vegeable sold_cabbage	28.4%
	Vegetable sold_cucumber	18.4%
Total		100.0%

At Survey site, during lockdown the vegetable were sold through the ways: Agriculture ambulance (37%), traders (22%), co-operative (29%) and collection center (12%). Agriculture ambulance was launched to help farmers overcome from the devastating loss in the production. The agri-ambulance somehow has been able to decrease the loss by acting as the means of linking farm to plate (i.e. producers to consumer) directly. Mainly lockdown hamper horticultural crops because of their perishable nature and storage problem then cereals crops.

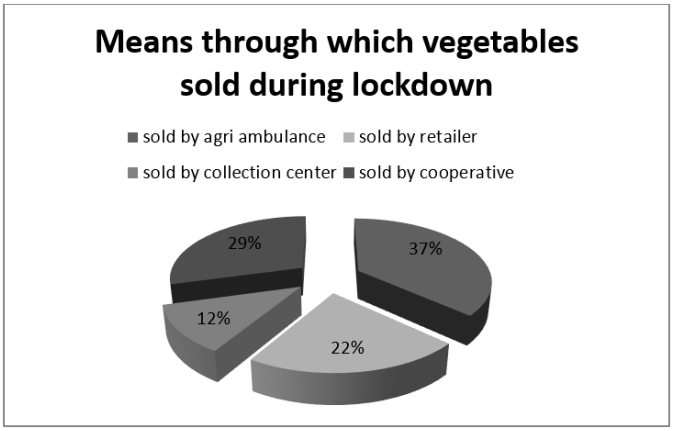

Figure 5: Means through which vegetables sold during lockdown.

A. Vendor / retailer:
The vendor is one of the main parts of the value chain where the value is added by a different process like grading, processing, packaging, etc in goods. Value is added in every step of this process due to which consumer needs to pay high amount while purchasing. Middle man plays the main role in this chain which directly affect consumer and producer. Consumer needs to pay a high price for goods and producer to get a low price from the vendor. Before lockdown, the prices of goods were in hiking process but due to coronavirus government force to close the market which directly impacts in the value chain and only for 2hrs permission was granted to open the shop in morning which impact in sells rate for them. So they could not sell the same amount what they were selling before lockdown.

B. Consumer:
Before lockdown, the price of vegetable was in the hiking process where the consumer needs to pay a huge amount and they like to buy a diversity of vegetable according to their choice and taste. During lockdown, Vegetable import was stopped which helps the farmer to sell their vegetables in the local market but they don't have different types of vegetable in their field which affect in the choice of the consumer and have limited choice to select vegetable according to their taste.

During lockdown cause by COVID-19, the demand of vegetable was high but the price of vegetable goes on decreasing because of perishable goods and there is a direct link between producers to retailer to consumer/producer to the consumer so that the price of goods goes on decreasing at that time. Bar graph had shown the price before and during the lockdown in Palpa district.

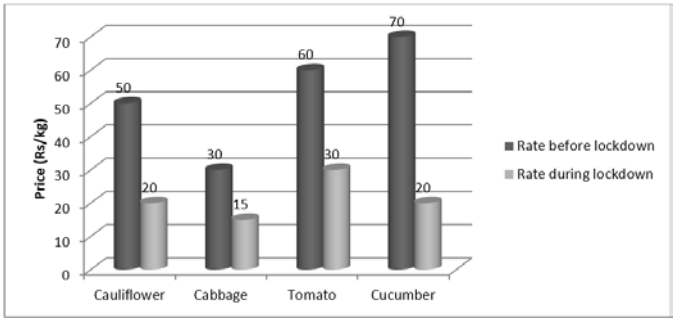

Figure 6: Sales rate of vegetable before and during lockdown.

3.3.1.2. Government Institution:

Due to Covid-19, except emergency office like electricity, hospital, water office etc all the office were closed which were not under the list of essential service Rajpatra. Agriculture office is also not kept in that list which directly affected their work that was the time they provide subsidy to the farmer.

According to AKC, Palpa, in Province-5, Ministry of Land Management Agriculture and Cooperatives (MoLMAC) takes a big step in favour of farmer to sell their products. They launched Agri-ambulance support services which help farmer to overcome from a big devastating loss. Its main aim was to link between farmers and consumers. Agri-ambulance sold products door to door in cheap price than the retailer. From argi-ambulance both producer and consumer were in benefit. Selling of is not only the problem in that time different disease and pest also attack in the field at the same time in Palpa, but farmer also did not get pesticide to control from disease and pest so that farmer was in a big dilemma. If the control was not done in time then around 70% of the crop (tomato and maize) was going to be damage that time but AKC palpa play a vital role in the favor of farmer. With high risk, they went to out of the district in search of pesticide and distribute door to door. The entire farmers weresatisfied by the work of AKC. They are also providing advice to help the farmers prepare to plant summer crops. Due to movement restrictions, where possible they went by bike also they provide advice over the phone. MoALD also launched another program in favour of people who are returning from abroad to engage then in agriculture and increase production because the mouth to food ratio is increasing every day.

4. Conclusion

Since this research was conducted, the government has eased lockdown restriction, allowing many farmers to resume their activities. In agriculture, COVID-19 mainly affected on supply chain and post-harvest of vegetable in Palpa district due to which it causes losses by 42% in the vegetable. Government service whose support farmer and agribusiness out of this crisis are also experiencing significant financial, operational strain and limiting their capacity to operate. They start argi-ambulance to sell the vegetable from producer to consumer level and provide subsidy for the needy farmer.

Government is proposing a holistic intervention strategy to support Post –COVID-19 economic and increase yield which in the short term supporting farmers with financial and technical support to recover losses. The government should work on post-harvest too. Not only Livestock but also The Department of Agriculture should also keep in RAJPATRA.

5. Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.

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References

ABPSD. 2015. Statistical Information on Nepalese Agriculture. Kathmandu, Nepal: Ministry Of Agriculture and Cooperatives.

Bhosale, M. S. 2020. Prices of Vegetable, grain sugarcan fall on poor deamnd.

Bindhu, H. 2020. Lockdown Impact on agriculture Sector.

Chaboussou, F. 2004. Healthy crops: a new agricultural revolution.

Deo, D. 2020. Agriculture Response package for COVID-19 will be implemented to ensure access to food ins not affected-Reddy. FIji.

FAO. 2010. Rice and Human nutrition. Food and Agriculture Organization of United States.

Gobinda Pandey, S. b. 2017. An Analysis of vegetables and fruits Production Scenario in Nepal. Asian research Journal of Agriculture, 2.

Guardian, T. 2020. Status of COVID-19.

LePan, N. 2020. Visualizing the History of Pandemics.

Manuel M.dayrit, R. U. 2020. COVID-19: Countering the Econpmic cotagion.

Marco Cascella, M. r. 2020. Features,Evaluation and treatment of Coronavirus. Nationa Llibrary of Medicine.

MoAD. 2014. Stastical Information On Nepalese Agriculture.

MoAD. 2014. Statistical Information on Nepalese Agriculture 2013/14. Singha Durbar, Kathmandu, Nepal: Ministry of Agriculture Department.

MoAD. 2012. Statistical Information on Nepalese Agriculture,2011/12. Singh Durbar, Kathmandu, Nepal.: Ministry of Agricultural Department.

MOALD. 2019. Stastical Information On Nepalese Agriculture. Kathmandu: Government of Nepal.

Mr Ram Hari Timilsina, P. S. 2077. Impact of COVID-19 on Nepal's Agriculture: The Road Ahead.

Nepal, T. R. 2020. lockdown Impact On Bhojpur's Vegetable. Kathmandu.

Nepal, T. R. 2020. Lockdown Impact On Bhojpur's Vegetable. Bhojpur.

PMAMP. 2016. Project Document of Prime Minister Agriculture Modernization Project (PM-AMP). Singha Durbar, Kathmandu: GoN, Ministry of Agriculture Development.

Prasain, K. 2020. Vegetable prices plunge as lockdown keeps customers away from market. kathmandu: The Kathmandu Post.

Regmi, R. K. 2020. Nepal Covid-19, Food Security & Vulnerability Update 3. Kathmandu: MoALD.

Roser, M. 2020. Coronavirus Pandemic (COVID-19).

Sunda, N. R. 2017. A Competitive Book of Agriculture. Jaipur: Surahee Publications.

Ugo Gentilini, M. A. 2020. Social Protection and Jobs Responses to COVID-10.