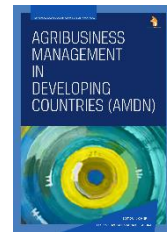




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RESEARCH ARTICLE

PROFITABILITY AND PRODUCTIVITY OF POTATO IN DARCHULA DISTRICT OF NEPAL

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ABSTRACT

Potato is considered a staple food in the Hill region of Nepal. It is considered a major crop (in cropping pattern) of the households in Api-himal RM, Naugadh VDC, Marma RM of Darchula District. The potato produced in these areas has a good quality reputation and is the major source of income. There are very few research studies that have assessed the profitability of potatoes in these areas. So, this study aimed to assess the profitability and productivity of potatoes in Darchula District of Nepal. The three areas were purposively selected as they have much better potato production in comparison to others in the district. With random sampling techniques, household respondents were collected. The respondents were interviewed using the face-to-face interview method in the month of February 2022. Altogether, 102 samples (50 from Api-himal RM, 31 from Marma RM, and 21 from Naugadh VDC) were selected. The necessary result was obtained by analyzing socio-economic and demographic characteristics, benefit-cost ratio, and production function using SPSS, Stata, and Microsoft Excel. The average productivity was found low due to disease infestation on crops. The per ha total cost of production was NRs.13, 008.75 with a total income of NRs.14, 832. The cost of FYM (31.06%) followed by harvesting cost and planting cost. The per hectare profit for potato production was NRs.1, 823.25 and per hectare total income from potatoes was found at NRs.14832 with a B/C ratio of 1.14 in the study area. The low production and productivity were due to the infestation of disease on standing crops. The technical and managerial skills in cultivation practices and provision of technical knowledge to control the disease as well as proper allocation of inputs and available resources would help to increase the profitability and productivity of potatoes. It is suggested to use disease-resistance-improved varieties and follow appropriate recommended cultural practices.

KEYWORDS

profitability, productivity, purposively, random sampling, disease resistance, improved varieties

1. INTRODUCTION

1.1 Background

Potato (*Solanum tuberosum*) is considered as one of the fourth most important crops in the world after wheat, rice and maize. It is one of the important cash crops to address food insecurity and poverty among small – holder farmer in the developing countries like Nepal. As a stable crop, it enhances the livelihood productivity (AITC, 2019). Its cultivation is popular among farmers due its wider adaptability, high yield potential and high demand which contributes about 6.57 and 2.17% in AGDP and GDP respectively (Shrestha and Sah, 2020). In the context of Nepal, the average per capita potato consumption of potatoes is 29.9 kg per year (CBS, 2019). The area under potato cultivation is 193,997 ha with an average production and productivity of 3,112,947 tons and 16.04 ton per ha respectively (MOALD, 2020).

Potatoes are widely cultivated from the southern Terai at an altitude of 100 masl to the northern mountains as high as 4000 masl in Nepal. It is grown in all 77 districts of Nepal and its productivity is increasing rapidly in recent year due to quality research. Potato is cultivated as a subsistence crop which is the best potential for yield increment and consists of high

starch (16.1 /100 gm), protein (2.1/100gm), vitamin C (17.1 mg /100 gm), potassium (443 mg/100 gm) and essential amino acids. Therefore, potatoes can be a good option to improve health and nutrition factor of rural population and is considered more productive than cereals and high value than cereals. Majority of the farmer are small holder having average of 0.68 ha of land size which requires commercialization for the better economic growth and development of least developed countries which relay on agriculture fragmentation of land has hindered in commercialization.

The national production during the period 2009/2010 to 2010/2011 increased (13.58 - 13.74Mt/ha) respectively. From 2011/2012 to 2013/2014 production of potato increased. From 2014/2015 production decreased slightly. From 2015/2016 to 2019/2020 slightly increased in potato production. The highest national production during the period was 16.65 Mt/ha in the year 2019/2020. Similarly, the least production was observed in the year 2014/2015 with the yield of 13.13 Mt/hac. There was least area coverage under potato in the year 2010/2011 with the area coverage of 182,600 ha. The area of the potato coverage from 2010/2011 to 2013/2014 slightly increased and then from 2014/2015 to 2019/2020 slightly decreased.

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2. REVIEW AND METHODOLOGY

About 60 % population of Nepal is involved in agriculture (AITC, 2021). Potato (*Solanum tuberosum* L.) is considered as one of the fourth most important crops in the world after wheat, rice and maize. It is one of the important cash crops to address food insecurity and reduce poverty among smallholder farmers in the developing countries like Nepal (Timsina et al., 2013). According to Subedhi et al., the cost of potato production in 1 kattha of land was highest in the Kailali (NRs. 14400.5) followed by Bara (NRs.13331.5) and Jhapa (NRs. 9632.2). The per ha total income from potato was found NRs. 268,047 with B/C ratio of 1.44 in Bajhang districts and low production and productivity was due to infestation of diseases on standing crops. (Bajracharya and Sapkota, 2017). The area under potato cultivation and production in the year 2077/2078 was 1,98,788 ha and 33,25,231Mt (Krishi dairy, 2079). About 7 billion rupees have been exported from Nepal for potato. Revenue of RS 541.394 million has been collected from potato imports. The gross revenue of small scale farm (NRs.382483.601/ha) with average benefits costs ratio of potato production was 1.47 in the Accham district (Sapkota et al., 2019).

A study carried out in the western mid hill region of Nepal Baglung district, estimated the benefits costs ratio of potato production to be 1.44 (Bajracharya and Sapkota, 2017). The overall average B/C ratio was found to be 1.23 in which Siddhicharan and Molung had B/C ratio of 1.55 and 0.99 respectively, which were statistically significant at $p < 0.1$ which indicated that farming in Molung of okhaldhunga district was not profitable (Ghimire et al., 2021). According to Subedi et al., the cost of potato production in 1 kattha of land was highest in the Kailali (NRs. 14400.5) followed by Bara (NRs.13331.5) and Jhapa (NRs. 9632.2). The per ha total income from potato was found NRs. 268,047 with B/C ratio of 1.44 in Bajhang districts and low production and productivity was due to infestation of diseases on standing crops. (Bajracharya and Sapkota, 2017).

Cost of production incurred in potato production and return gain from potato farming differ from place to place and from own ecological region to others and also from own living system to another. In Nepal price of potato products varies from hilly – mid hill and terai region. Especially, in hills and mid hill fetches low prices as compared to Kathmandu Valley and other major cities of Nepal. Seed cost occupied the major portion (33.3%) of the cost of production followed by the human labor cost (26.3%), FYM cost (12.3%), chemical fertilizer cost (7%), irrigation cost (1.7%), micro nutrients (0.8%) and pesticides (5.2%) (Subedhi et al., 2019). It has been revealed that the technical knowledge to control disease allied with proper allocation of inputs and resources would help to increase profitability and productivity of potato (Bajracharya and Sapkota, 2017).

2.1 National potato production and area trend

Year	Area (hac)	Trend	Production (Mt)	Trend
2010/2011	1,82,600		2,508,044	
2011/2012	1,90,250	increasing	2,584,301	increasing
2012/2013	1,97,234	increasing	2,690,421	increasing
2013/2014	2,05,725	increasing	2,817,512	increasing
2014/2015	1,97,037	decreasing	2,586,287	Decreasing
2015/2016	1,99,971	increasing	2,805,582	increasing
2016/2017	1,85,879	decreasing	2,591,686	Decreasing
2017/2018	1,95,268	increasing	3,088,000	increasing
2018/2019	1,93,997	decreasing	3,112,947	increasing
2019/2020	1,88,098	decreasing	3,131,830	increasing

Source: statistical information on Nepalese Agriculture, (2019/2020)

The production coefficient of variation of Nepal is 93.67%, where in case of sindhuli is 76.13%. 47.14 % was the productivity coefficient of variation of Nepal and 40.62 was the productivity coefficient of, sindhuli district, (Paudel et al., 2022). 51% was the area coefficient of variation of Nepal and 37.79% was the area coefficient of variation of sindhuli .so in all cases; variability is higher in the case of Nepalese trend.

In Darchula districts main problems are lack of fertilizer, no water for irrigation, transportation, lack of technical main power and lack of government and local body support. A group researcher found that, the major challenges are low yield, pest and diseases infestation and lack of government support and opportunity are low cost of production, increasing demand and increasing price etc. (Chauhan et al., 2021).

3. METHODOLOGY

3.1 Site Selection

The study was carried out in the Darchula district of far western province of Nepal covering 2322 square.km with an elevation ranging from 357 masl to 7123 masl. There are 2 municipalities and 7 rural municipalities. Out of them, Api-himal, Marma and Naugadh rural municipalities are one of the pocket areas for potato production. So Api-himal, Marma and Naugadh are purposively selected for study as it is the one of the major production and export area for potatoes.

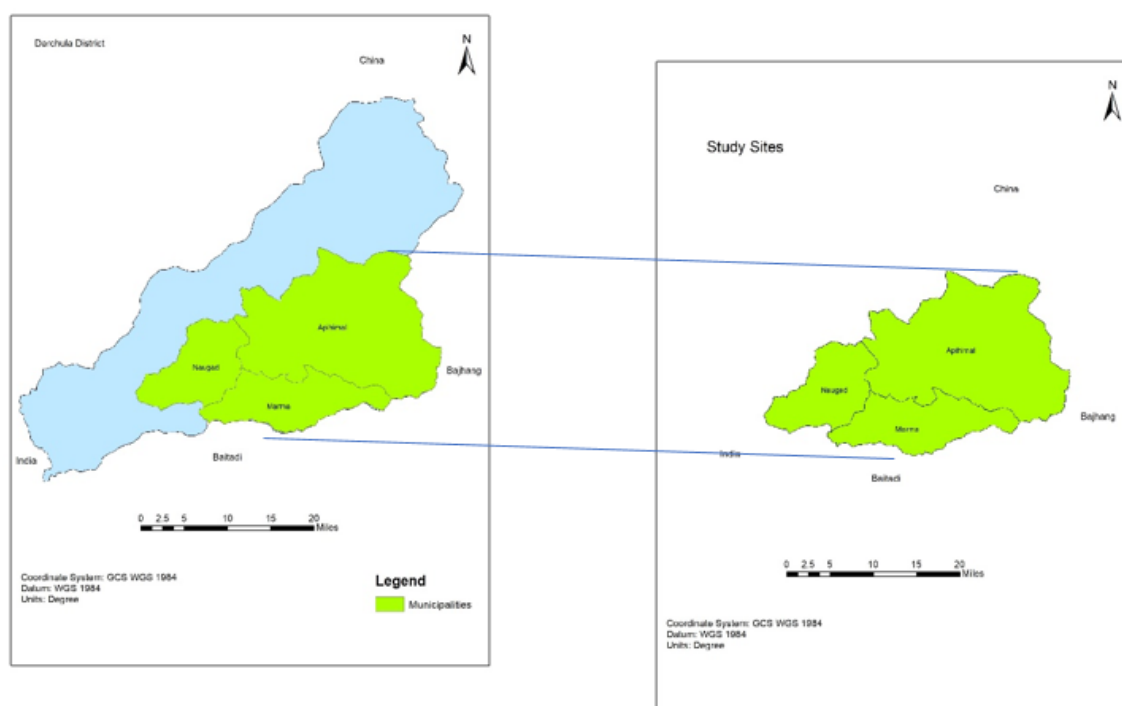


Figure 1: Maps showing the survey site conducted on 2021

3.2 Respondent Selection

The main governing body for production and marketing of potatoes is agriculture knowledge center, Darchula. In Darchula district, about hundreds of households are involved in production of potatoes and many marketing agents. Sampling framework was prepared based on information obtained from key informants, local leaders, secondary sources, information obtained from AKC and other stakeholders. The 3 VDCs (Api-himal, Marma, Naugadh) under Darchula district were purposively selected. These VDCs are good in potato production as compared to others in the district. Households were selected using simple random sampling techniques. Individual with an experience of at least 3 years in production of potatoes were selected.

3.3 Sampling Unit

The sample size of 102 household (50 HHs from Api-himal VDC, 31 HHs from Marma and 21 HHs from Naugadh VDC) having different socio-economic status were selected using random sampling techniques. The samples represented the people from entire age category, economic status, education level, ethnicity, gender and others parameters too. The respondents were interviewed using face to face interview method in the month of 2078 Falgun. The HHs and people having an experience of at least 3 years in production to marketing were interviewed.

3.4 Nature and Sources of Data

The study was focused on the primary and secondary data which were collected from two sources of data collection i.e., primary source and secondary source. The study mainly focused on the primary data collected. And secondary data from which huge information was obtained and open windows to meet may set objectives.

3.4.1 Primary Data

The primary data was collected through face-to-face interview of HHs by administering the semi-structured, structured and unstructured questionnaires. After completing the HHs survey, involvement of the others in the production and selling of potatoes were interviewed face to face by administering semi-structured, structured and unstructured questionnaires. These data obtained were verified and validated by using focused group discussion and key informants survey.

3.4.2 Secondary Data

The secondary data was extracted from various publication and reports prepared by different researches, legal documents, organizations like AKC, Api-himal RM etc.

3.5 Data collection Methods

3.5.1 Interview

Primary data was collected through the interview with the HH head or member involved in the potatoes production. Information regarding current situation of potato production viz; yield and productivity, farmers' situation, factors affecting production of potato and pricing of potato was collected through personal interview with the inhabitants using pre-printed paper-pen questionnaire.

3.5.2 Focus Group Discussion (FGD)

The focus group discussion was carried out to validate and verify the data obtained. In focus group discussion participants were the inhabitants and others stakeholders representing the entire ethnic group, age category, economic status, education level, ethnicity gender and others parameters too.

3.6 Survey and Survey Design

3.6.1 Interview Schedule Design

An interview schedule is basically a list containing a set of structure questions that have been prepared, to serve as a guide for interview researcher and investigator in collecting information or data about specific topic or issue. Interview schedule was prepared to collect the primary information from selected respondents. Consistency in interview schedule was maintained with the objectives of the research. All three viz. structured, semi-structure and unstructured question were included in the interview schedule. Questions sequencing was of the top most importance in the interview schedule and they were ordered in such a way that the preliminary objectives and vice versa.

3.6.2 Pre-testing of the interview schedule

Once prepared interview schedule was pretested to the 20 individuals living in the adjoining VDC to determine its effectiveness in a gathering reliable and valid information and final amelioration in the interview schedule was done to make it final to collect the information.

3.6.3 Field Survey

Field survey was conducted in (Api-Himal, Marma and Naugadh) RM of the Darchula district to gather information from the selected respondent. Preliminary field survey through FGD and interview with HH or family member involved in potato production and stakeholder was executed before the starting of main survey. Researchers were involved directly in the field survey along with two other well prepared enumerators and the survey was carried out for 10 days.

3.7 Method and Techniques of Data Analysis

Primary data collected through field survey and data entered on MS excel spread sheet. Secondly collected data were also maintained. Coded and maintained data were analyzed using IBM SPSS V.21.0. Both descriptive and analytical methods were used to analyze the data. Descriptive statistics will be used which includes frequency, percentage, mean, standard deviation and chi-square association will be analyzed using IBM SPSS V.21.0. The output of analysis was presented in relevant tables and figures and interpreted findings with relevant literatures.

3.7.1 Gross Margin Analysis

Gross margin was calculated as:

Gross margin = Gross return – total variable cost

Where,

Gross return = price of potato × Total potato production

Total variable return = summation of all variable costs

Variable cost = cost of seed, FYM, human labor, bullock labor, intercultural operation, fertilizer and pesticides costs.

Other cost includes transportation cost from field to storage area and cost for loading and unloading during marketing.

3.7.2 Benefit Cost Analysis

Benefit cost analysis was done after calculating the total cost and gross return from the potato production. Cost of production was calculated by summing the variable cost items in the production process. Therefore, the benefit was carried out by calculating the benefit cost ratio (B/C ratio) using formula:

B/C ratio = Gross return / Total variable cost

3.7.3 Problems on production and marketing

Indexing/scaling technique was applied to construct an index for prioritizing the problem as per farmer perception to the different production and marketing problem were ranked as:

1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, 5 = strongly agree.

The index was prepared mainly considering the qualitative data by using five-point Scale. The index was computed by using the formula.

$I \text{ prob} = \sum Si fi / N$

Where,

$I \text{ prob}$ = index value for intensity/severity

Si = scale value at i th intensity / severity

fi = frequency of the i th severity

N = total no of respondent

4. RESULTS AND DISCUSSIONS

4.1 Socio economic characteristics of respondents

Socio economic characteristics of respondent include population distribution, Gender, Ethnicity, Occupation, Education level, Land category and their distribution.

4.1.1 Gender of Respondent

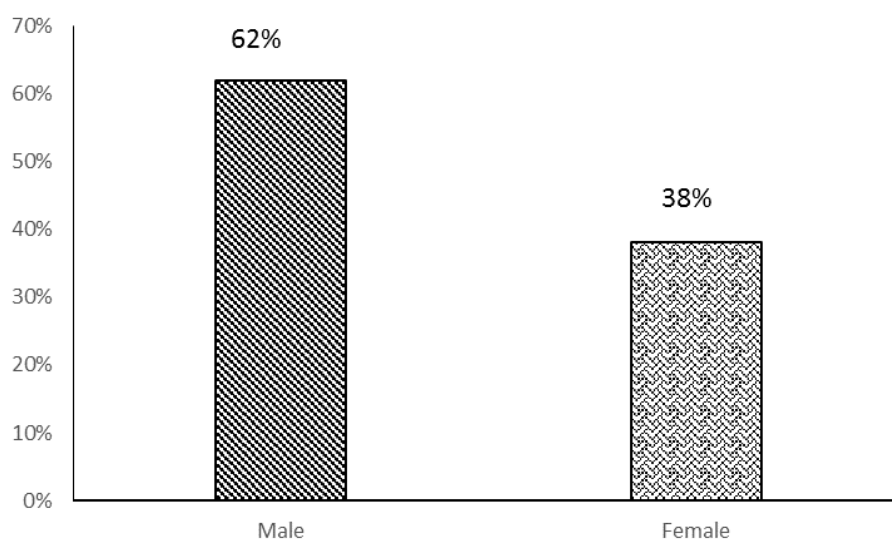


Figure 1: Distribution of the population of the respondents by gender

Source: Field Survey (2021)

The given figure (1) reveals that among 102 household respondents selected for interview in our study area, 63(62%) were male whereas 39(38%) were female. This indicated higher involvement of male respondent in providing the information about the household than female.

4.1.2 Population and Gender

Table 1: Population distribution of sampled household by gender			
Family size	Minimum	Maximum	Average
Male	0	11	3.30
Female	1	10	2.86
Total	3	18	6.17

Source: Field Survey, 2021

Table 2: Population distribution of sampled household by gender		
Gender	Frequency	Percent (%)
Male	337	53.58
Female	292	46.42
Total	629	100

4.1.4 Educational status of the respondents

The total population of 102 household was found to be 629 out of which 53.58% were male and 46.42% were female.

4.1.3 Religion and ethnicity of respondents

Table 2: Distribution of the respondents by religion and ethnicity	
Variables	Percentage
Religion	
Hindu	100
Ethnicity	
Brahmin	1.96
Chhetri	98.04
Total	100

Source: Field Survey (2021)

All the respondents residing over the researched area were Hindu by religion. And among those majority of respondents were Chhetri (98.04%) followed by Brahmin.

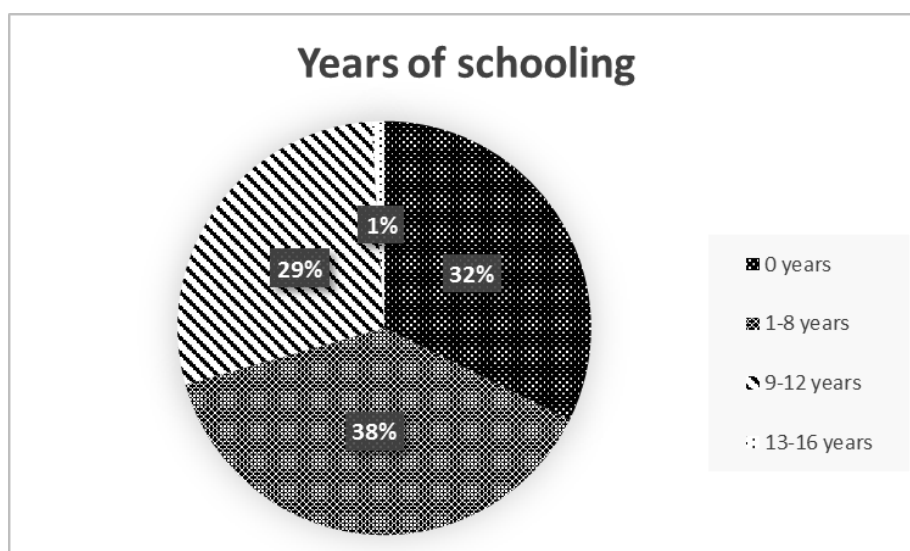


Figure 2: Years of Schooling of respondent in the study area (Source: Field survey, 2021)

Respondents were categorized into four different educational level based on years of schooling i.e. 0 years of schooling as illiterate, 1-8 years of schooling as primary level, 9-12 years of schooling as secondary level and 13-16 years of schooling as higher level. The given chart shows that, majority of the respondents were found to have primary level of education (38%). The chart also shows that vast majority that is 32% of the respondent were illiterate. 29% of the respondent had secondary level of education and only few (1%) were educated to higher level.

4.1.5 Occupation

Table 3: Occupation of the respondents

Occupation	Frequency	Percentage (%)
Agriculture	100	98.04
Government Job	2	1.96

Source: Field Survey, 2021

Majority of the respondents (98.04%) in our study area were engaged in agricultural activities for their living and only (1.96%) were engaged in servicing (government). The data in figure 2 also partly explains why majority of the population is involved in agriculture and very few are involved in government affiliated servicing job.

4.1.7 Total land holding and land distribution

Table 4: Land holding and land distribution

Descriptions	Minimum	Maximum	Mean
Total land holding			
Land Owned (Ropani)	1	66	9.78
Land Lease (Ropani)	4	4	4
Total land (Ropani)	1	68	9.78
Land allocated for potato cultivation			
Land Owned (Ropani)	0.5	4	1.33
Land Lease (Ropani)	0.50	0.50	0.50
Total land (Ropani)	0.50	4	1.32

Source: Field Survey (2021)

4.1.8 Number of family involved in potato cultivation

Average number of family involved in potato cultivation was 3.12

4.1.9 Involvement in group

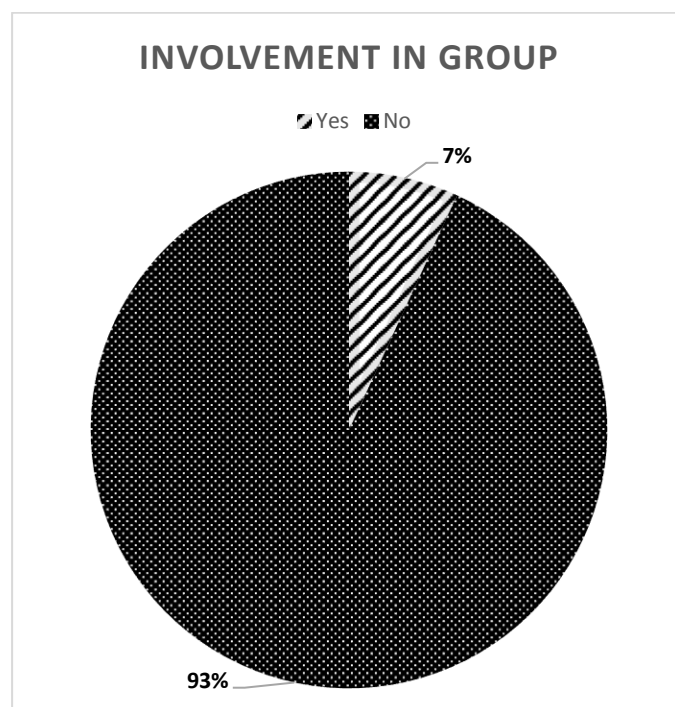


Figure 4: Involvement in group (Source: Field Survey (2021))

4.1.6 Status of land holding

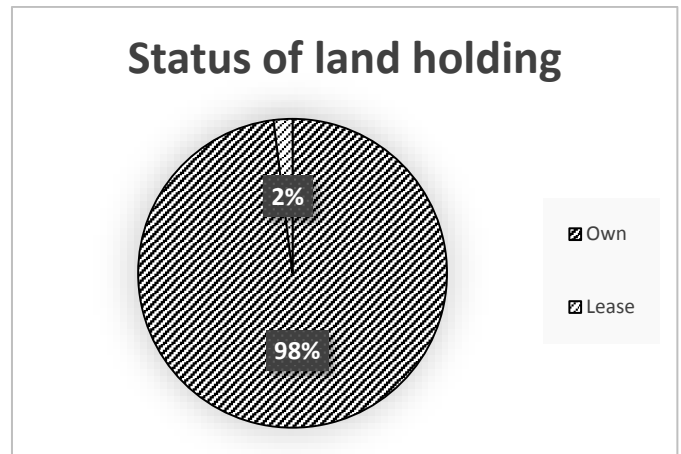


Figure 3: Status of land holding (Source: Field Survey, 2021)

Most of the respondent used own land for potato cultivation and few cultivated in leased land.

Only few of the respondents were involved in organization whereas most of them were not involved in any kind of organization.

4.1.10 Involvement in cooperatives and training

Table 5: Involvement in cooperatives and training	
Variables (n=102)	Percent
Involvement in cooperatives	
Yes	17.64
No	82.36
Total	100
Training related to potato farming	
Yes	21.56
No	78.43
Total	100

The average rate of potato tuber per ropani of field was 43.21kg.

4.1.12 Problems related to input procurement

Table 6: Problems related to input procurement					
Statements	N	Minimum	Maximum	Mean	Std. Deviation
Not Available in Time	102	1	2	1.22	0.414
Seed centre far from farm	102	1	4	1.64	0.625
Low purchasing capacity	102	1	4	2.01	0.591
Difficulty in transportation	102	1	3	1.42	0.636
Low quality inputs	102	1	4	2.01	0.685
Uncertified Seeds	102	1	3	1.72	0.746

Note: 1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree, 5=Strongly agree

Source : Field Survey (2021)

4.1.13 Potato cultivation for

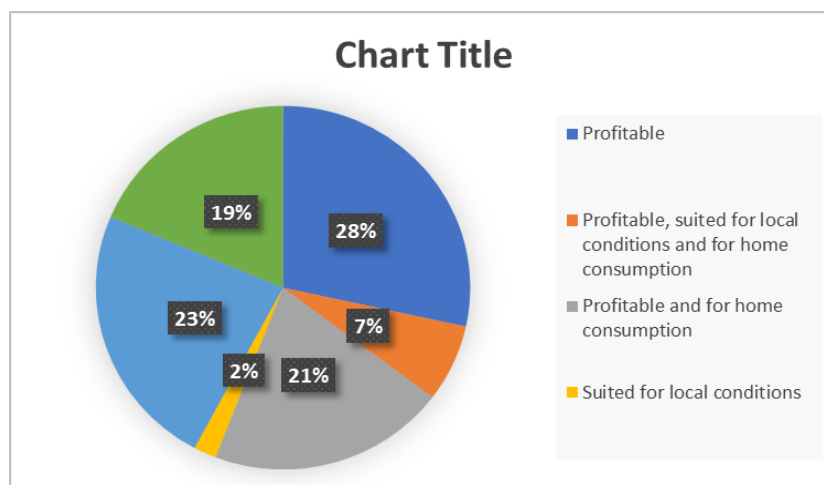


Figure 5: Reasons for potato cultivation (Source: Field Survey (2021))

4.1.14 Problems in potato farming

Table 7: Problems in potato farming								
Major problems	Scores					Total	Index	Ranks
	1	0.8	0.6	0.4	0.2			
Marginal land	8	2	5	30	57	102	0.353	V
Seed Availability	17	31	47	5	2	102	0.709	II
Disease and Pest	44	36	22	0	0	102	0.843	I
Irrigation	21	16	23	35	7	102	0.617	III
Labour	1	3	2	24	72	102	0.280	VI
Marketing	11	14	3	16	58	102	0.411	IV

4.1.11 Procurement of Input material

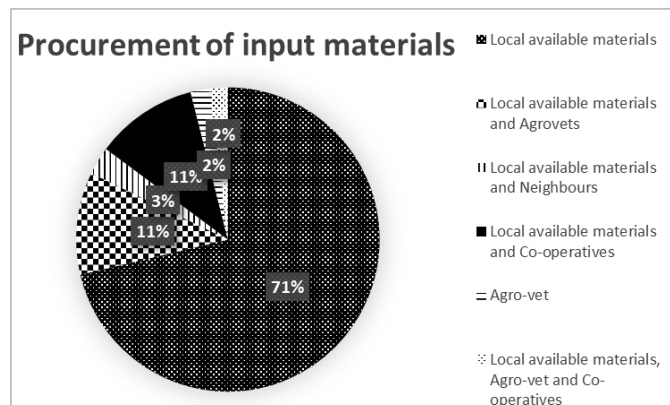


Figure 6: Procurement of input materials (Source: Field Survey (2021))

Locally available input materials were used excessively in the study area.

The production of potatoes is hampered by a number of factors. Productivity has been reported to be significantly impacted by irrigation availability, disease and insect infestation, and seed quality. (Chauhan et al., 2022; Subedi, 2019). The scaling technique (indexing) was used to rank the problems based on the farmers' perceptions. According to the report, among the production issues, disease and pest infestation was the major problem followed by seed availability, irrigation, marketing, marginal land and labour. (Table 7)

Variables (n=102)	Percent
Dehauling Practice	
Yes	17.64
No	82.35
Total	100
After harvesting conduct the activities	
Drying	34.31
Sorting	16.67
Drying and Sorting	10.78
Cleaning	10.78
Drying and cleaning	2.96
Drying, sorting and cleaning	3.92
Packaging	0
Others	20.58
Total	100
Sorting	
Yes	96.49
No	3.51
Total	100
Cleaning	
Yes	50.88
No	49.12
Total	100
Packaging	
Yes	1.75
No	98.25
Total	100

Variables (n=102)	Percent
Buy the potato seed every year	
Yes	61.76
No	38.24
Total	100
Happy with potato seed bought	
Yes	84.31
No	15.69
Total	100
Change in production from purchased seeds	
Yes	87.25
No	12.75
Total	100
Difficulty in input procurement	
Yes	95.09
No	4.91
Total	100

Source : Field Survey (2021)

4.1.15 Storage facility

STORAGE FACILITY

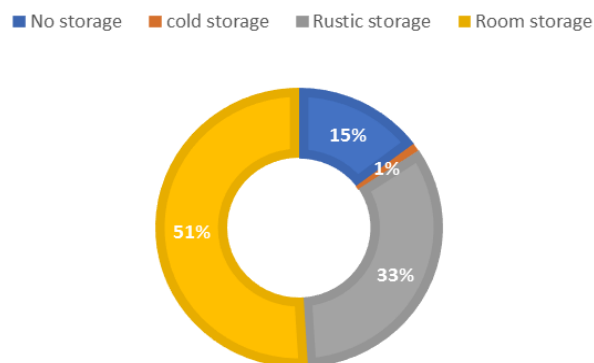


Figure 6: Storage facility (Source: Field Survey (2021))

The post-harvest management of the potato is crucial for maintaining its safety and nutritional value as well as for preventing postharvest losses. The potato can accumulate poisonous chemicals called glycoalkaloids when exposed to unfavorable conditions like light, extremely hot temperatures, and bruising. (Musita et al., 2019). Storage which is one of the important post-harvest management technique plays a crucial role in maintaining the condition of potatoes. Among the respondents in the study area, significantly high number of people (51%) preferred room storage followed by rustic storage (31%)

4.1.16 Planting methods

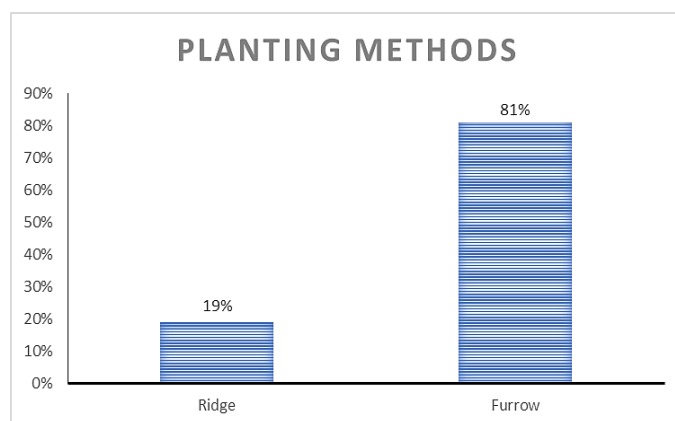


Figure 9: Planting methods (Source: Field Survey, 2021)

In our study area majority of the population i.e, 81% followed furrow plantation method for cultivation and 19% of the respondents followed ridge planting system. The results are similar as obtained (Chauhan et al., 2022).

4.1.17 Disease problem

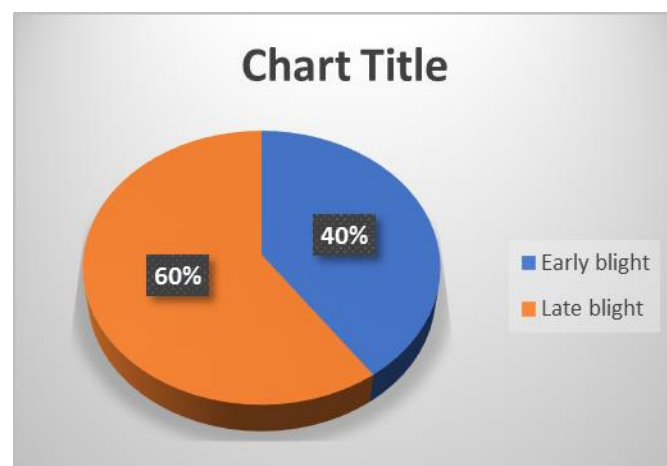


Figure 7: Disease problem (Source: Field Survey, 2021)

Late blight (*Phytophthora infestans*), bacterial wilt (*Pseudomonas solanacearum*), black scurf (*Rhizoctonia solani*) and tuber warts (*Synchytrium endobioticum*) are the most prevalent potato pathogens

identified in Nepal (Mahto et al., 2017). In the study area 60% of the respondents have faces the problem of late blight and around 40% have ecouter early blight infestation.

4.1.18 Major Insects

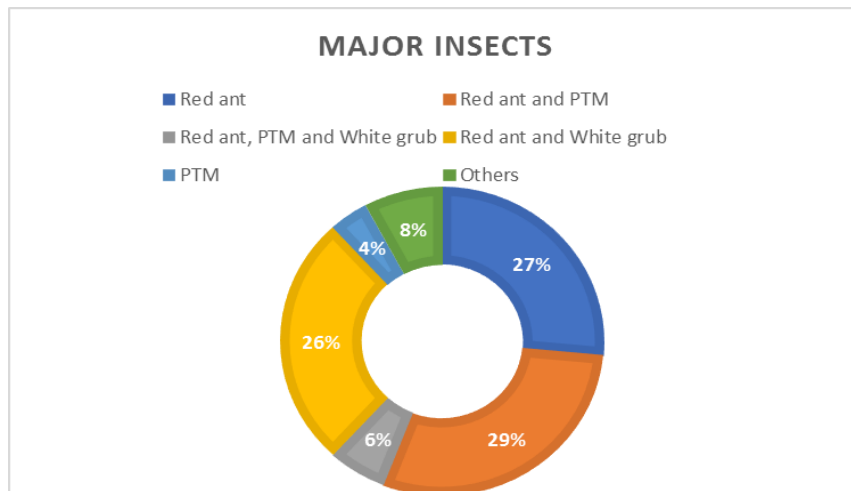


Figure 8: Major insects (Source: Field Survey 2021)

The major disease pest associated with potato production in our research area were red ant and white grub.

4.1.19 Management of pests

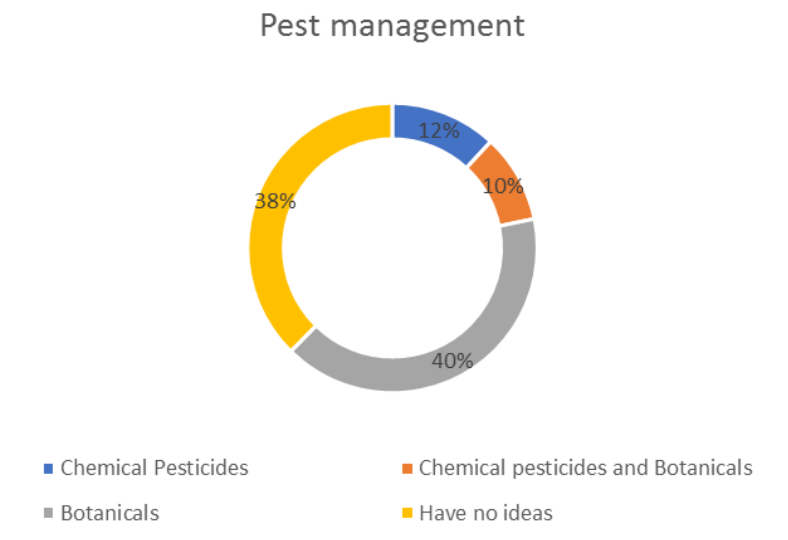


Figure 9: Pest management

4.1.20 Cost of cultivation of potato

Table 8: Cost of cultivation of potato per ropani in the study area					
Cost item	Unit	Quantity	Rate	Price (NRs.)	Contribution to total cost (%)
Average area under potato cultivation					1.32 ropani
Tuber cost					
Cost of land preparation	-	-	-	1000	7.68
FYM	Doko	80.82	50	4041	31.06
Urea	kg	20.15	25	503.75	3.87
Potash	Kg	22.85	40	914	7.02
Planting cost	Man day	2.96	500	1480	11.37
Weeding cost	Man day	2.43	500	1215	9.34
Harvesting cost	Man day	3.4	500	1700	13.06
Land preparation	Man day	2.31	500	1155	8.88
Pest control	-	-	-	1000	7.68
Total cost				13008.75	100
Total production	kg	296.64	50	14832	

The cost of production includes labor and manpower cost ,land preparation cost, post-harvest operation cost, Marketing and other cost) and Input cost (fertilizer, seed, Pesticides, Insecticides and other supplements). From our study we found that the cost of production for potato per ropani was Rs. 14,832 where FYM contribute the highest cost in cost of production i.e., 31.06 % of the total cost followed by harvesting (13.06), planting cost (11.37%), land preparation (8.88%) and so on (Table 2).

Comparative analysis of cost of production and returns/ Benefit-cost analysis.

Table 9: Benefit- cost analysis			
Particulars	Average Return (Rs./ha)	Average cost (Rs./ha)	B/C ratio
Total	14832	13008.75	1.14

4.1.21 Trend of potato cultivation

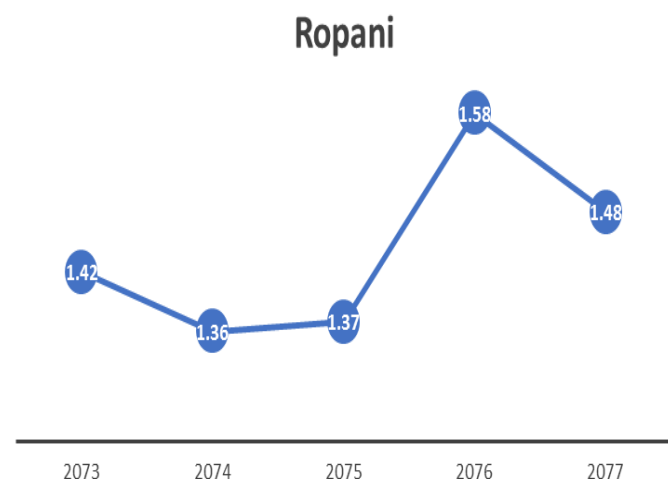


Figure 10: Trend in potato cultivation

4.1.23 Major marketing problems

Table 11: Major marketing problems								
Major problems	Scores							
	1	0.8	0.6	0.4	0.2	Total	Index	Ranks
Transportation	77	7	16	2	0	102	0.911	I
Middle man	14	24	22	10	32	102	0.556	III
Low price	17	47	21	2	15	102	0.696	II
Influence of Indian market	23	3	14	9	53	102	0.470	V
No marketing channel	12	12	37	20	21	102	0.549	IV
Lack of support from local government	0	14	19	23	46	102	0.401	VI
Low market demand	7	13	14	5	63	102	0.396	VII

Table 12: Major players in price determining								
Major players in price determining	Scores							
	1	0.8	0.6	0.4	0.2	Total	Index	Ranks
Local collectors	53	12	8	5	24	102	0.727	I
District traders	13	39	15	10	25	102	0.609	II
Cooperatives	7	21	40	11	23	102	0.556	IV
Wholesalers	21	14	12	41	14	102	0.574	III
AKC, Darchula	10	6	8	5	73	102	0.354	V
External agents outside district	0	1	0	9	92	102	0.223	VI

4.1.22 Perception on potato cultivation

Table 10: Perception on potato cultivation		
Perception	Frequency	Percentage
Fully satisfied	6	5.88
Satisfied	87	85.29
Unsatisfied	6	5.88
Cannot decide	3	2.94

72.54% of the farmer sell the potato and for majority of respondent production was sufficient for year round

90.19% of respondent find any change in taste between locally produced tubers and purchased ones

Expectations from government: Providing support, subsidies, improved seeds, chemical fertilizer

80.39% of respondent wants to increase potato cultivation if government supports them.

Suggestions were connecting with rural municipality, training about new technology, new innovations and training related to potato cultivation

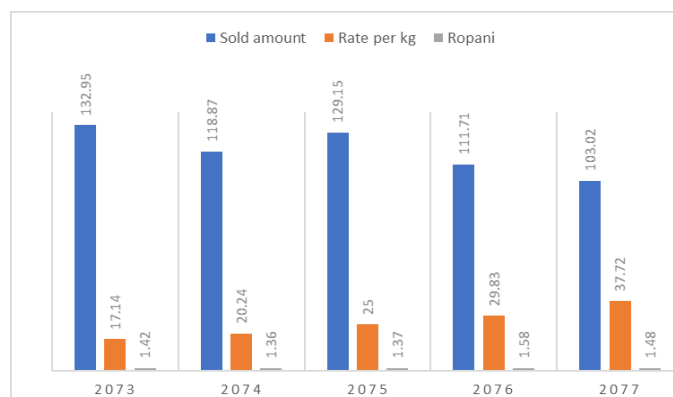


Figure 14: Trends in potato cultivation and productivity

4.1.24 Credit supply

Table 13: Sources of credit supply

Statements	N	Minimum	Maximum	Mean	Std. Deviation
Banks	102	1	3	2.71	0.716
Finance company	102	2	3	2.71	0.464
Cooperatives	102	1	3	1.492	0.687
Local money lenders	102	1	3	1.622	0.552
AKC	102	1	3	2.485	0.600

Note: Easy=1 Average=2 Difficult=3

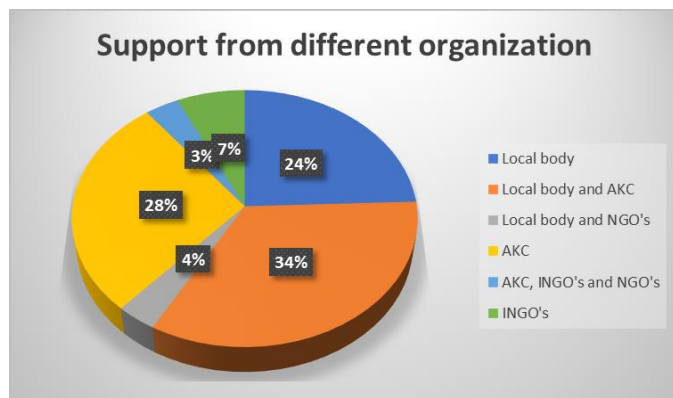


Figure 11: Organizational support

5. CONCLUSION

The production area of potato in Apihimal RM, Marma RM and Naugadh VDC, Darchula district was in decreasing trend. During the production of potato the major problems observed were disease and pest (late blight, red ant and white grub), seed availability, irrigation, marketing. The problem related to input procurement were uncertified seed, low quality inputs, not available in time and seed Centre far from farm. Majority of farmers used potato seed from locally available following furrow planting system. Room storage structure was mostly used for storing potato. Benefit cost ratio was found to be 1.14.

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