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Impact of youth focused vegetable production in Eastern region of Nepal

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ABSTRACT

Youth Focused Vegetable Production Program (YFVPP) was started by Vegetable Development Directorate (VDD) for the first time in the FY 013/14 as pilot phase in 25 districts with the aim of increasing opportunities to youths in vegetable sector so that out migration to gulf countries in seek of job can be reduced. After positive response from all stakeholders in pilot phase, the program was extended to all 75 districts as full phase for two consecutive years. The program covered 9893 youth farmers throughout the country. Out of them 23% were female while 77% were male farmers. A survey was conducted in three districts namely Sunsari, Dhankuta and Sankhuwasabha with a sample of 60 youth farmers. Majority of participants (50 percent) were either returned from abroad or in process of going aboard and 96.70 percent were not interested to go abroad for employment after participation in program. The study showed that per ropani income from winter vegetable was high as compared to income from spring and rainy season vegetables. Majority of participants, 95.0%, were continuing their vegetable farming while 5% were found to discontinue their farming business after participating in youth focused vegetable production programme. Selling of products in hat bazaar by farmers themselves was the most commonly preferred system of selling comprising 63.3% of respondents. Other practices were selling to the local traders, selling from collection centers and selling via agents.

***Keywords*:** impact, hat bazzar, stakeholders, vegetable, youth

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1. INTRODUCTION

Agriculture is the main source of livelihood for more than 65.6% of people and contributing about 31.32% to national GDP (MoAD 2014/15). The total cultivated area of the country is 3.09 million hectares. It has been seen that the average agricultural land has decreased from 1990 to 2012 from 4192000 to 4180000 ha (FAOSTAT, 2016 and Paudel *et al*., 2016). The most important crops grown in Nepal are rice, maize, wheat, millet, barely, potato and sugarcane. Different vegetable crops are grown all over the country mainly as minor crops. The vegetable crops occupy 8.63 percent of the total cultivated agricultural land (MoAD 2014/15) which indicates the increasing value of vegetable sector in Nepalese economy. The ever increasing demand of vegetable products for import substitution and export promotion shows the potential of thesector (Bhattarai and Ojha, 2012).

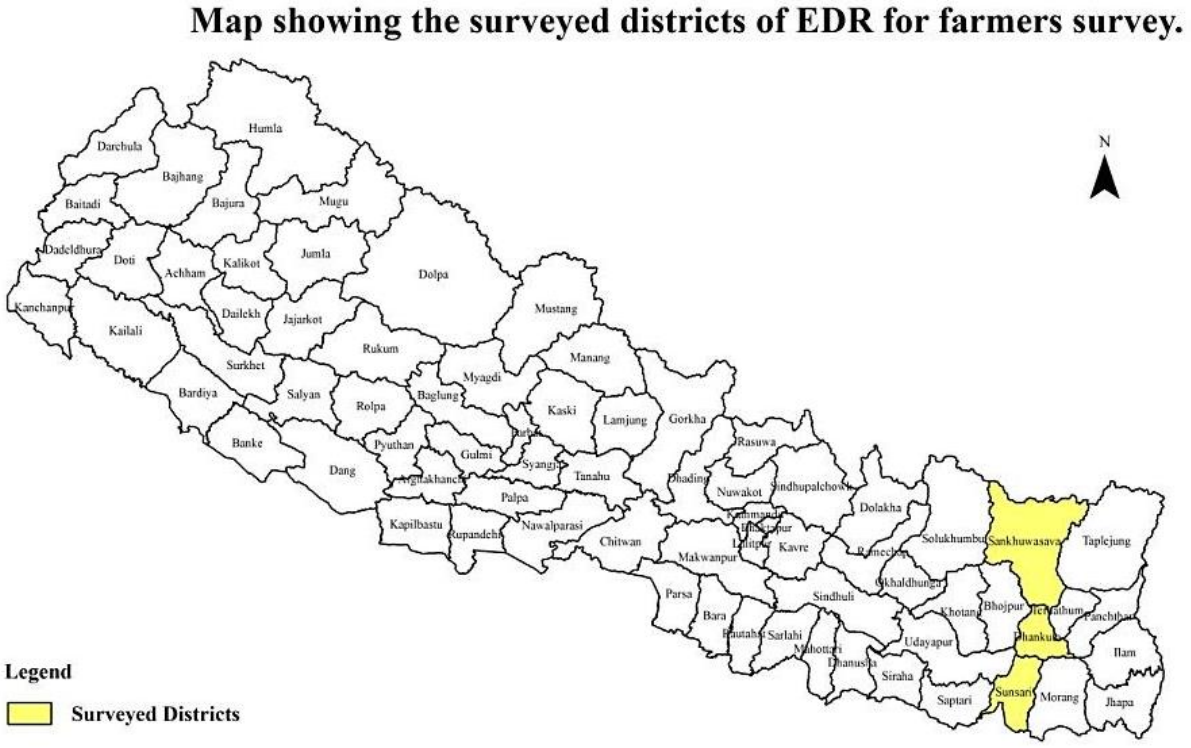
In vegetable production, the application of both organic and inorganic fertilizer combined, increase the yield as well as keep the environment sound (Hsieh *et al*., 1996). In Nepal, 55 different vegetable crops are grown with the total area, production and productivity of vegetable crops is 280806 ha, 3819809 MT and 13.6 MT/ha respectively (VDD, 2016/17). The varieties of vegetable and history of fertilizer use are important factors to be considered in the development of a soil nutrient management program (Huang, 2006). Organic fertilizer increases the productivity of soil as well as crop quality and yield (Tindall, 2000). The total production of the vegetable crops turned out to be 3819809 metric tons. In terms of total hectares (ha) of vegetable crops grown in Nepal, the most prevalent crops include: cauliflower, cabbage, onion, tomato, radish, broad leaf mustard, okra, bitter gourd, cucumber, eggplant, hot pepper/chilli. The vegetable sector in Nepal has grown rapidly over the last 10 years, primarily through producers diversifying away from staple crops rice, maize etc. The average yield has also increased by 2.2% on average annually (17.7% overall). Furthermore, Nepal's per capita vegetable consumption has increased from 60 kg to 105 kg over last two decades. Vegetables can be grown year-round, including in the off-season for staple crops such as rice, maize and potatoes. This provides an opportunity for increased income generation for producers through intensifying cropping patterns over the year. Youth focused vegetable production program (YFVPP) was one important and different program launched and implemented by Vegetable Development Directorate (VDD Khumaltar, Kathmandu, Nepal (2016/17). VDD implemented this program through district agriculture development offices (DADOs) across the country for three years from FY 013/14. So, the study was conducted to access the performance of program at district level.

2. METHODOLOGY

Both DADO's survey and farmers survey were conducted to collect the data for this study. For DADO's survey, a semi structured questionnaire was prepared and used to collect the data regarding YFVPP. The detail methodology used for farmers survey was described in detail below.

2. 1. Survey Districts

Three districts namely Sunsari, Dhankuta and Sankhuwasabha were selected from the EDR for the farmers survey. These selected districts are representatives of terai, mid hills and high hills eco-zone and were selected based on consultation with VDD.



2. 2. Sampling design and Sample size

Stratified random sampling disproportionate to size was the sampling design used to conduct the study. The representative district selected from each eco-zone was considered as strata of that eco-zone. From each strata 20 farmers were selected randomly so altogether 60 farmers were surveyed from 3 strata (three districts).

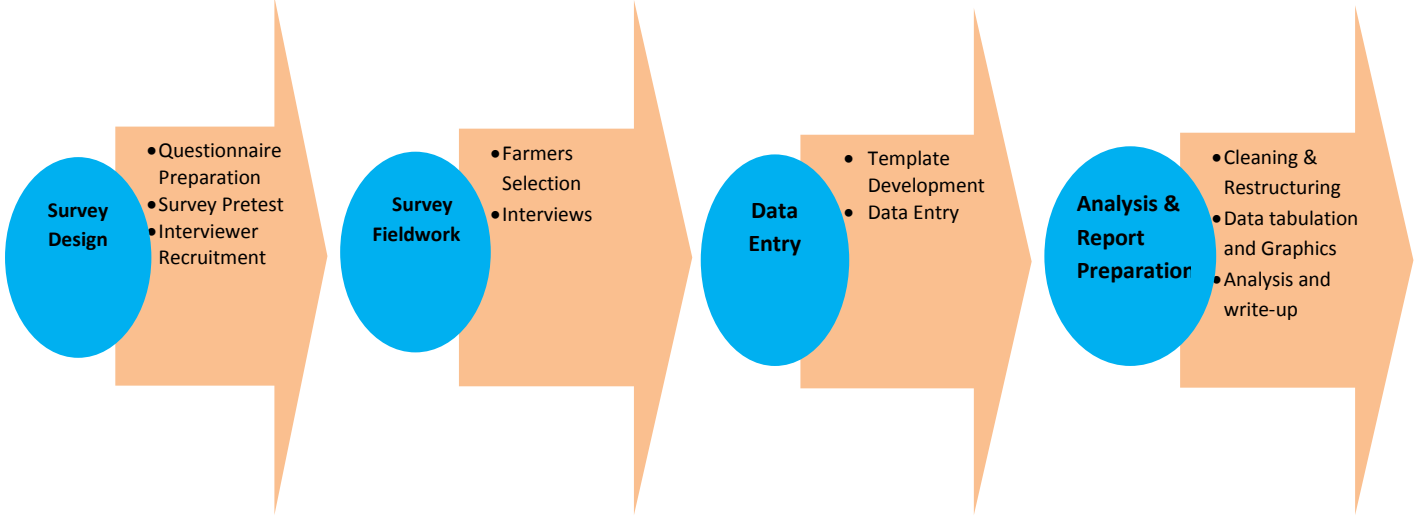


Fig. 1. Flow chart of methodology adopted during survey and data analysis.

2. 3. Household survey

Semi structured questionnaire was administered by enumerators to the randomly selected farmers for survey to collect the data.

2. 4. Data entry and analysis

The collected data were entered in the spread sheet in Microsoft Excel program. After completing entry, processing of the entered data was done and finally they were analyzed by using SPSS software package.

3. RESULTS AND DISCUSSIONS

3. 1 Project districts

In the FY 013/14 Ministry of Agricultural Development (MoAD) launched new program in the name of Youth Focused Vegetable Production Program (YFVPP) for the first time in the vegetable subsector as pilot program in 25 districts as highlighted in the map. Among 25 districts, 3 districts were from FWDR, 4 districts from MWDR, 8 districts from WDR, 4 districts from CDR and 6 districts from EDR. Pilot phase was implemented in 1 high hill, 8 mid hill, 2 inner terai and 14 terai districts as mentioned in Table 1. After successful implementation of pilot phase, this program was extended to all 75 districts and implemented for 2 FYs as full phase.

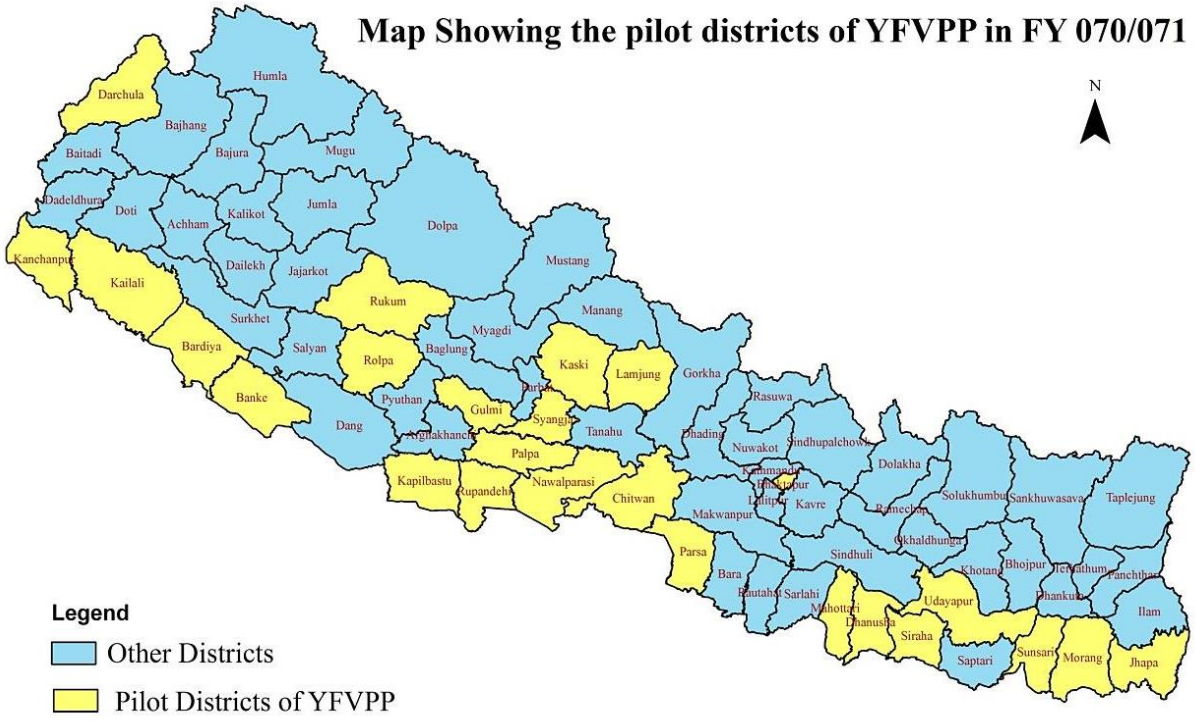


Fig. 2. Map showing pilot districts of YFVPP in the FY 013/14

3. 2. Sex of respondents

During field study it was observed that most of the respondents/participants were male (76.7 %) across the study districts (Table 1), on comparison 75 percent in Sunsari and Sankhuwasabha and 80 percent in Dhankuta. Out of 60 surveyed participants 76.7% participants were male and 23.3 percent were female.

Table 1. Sex of respondent by districts (2017).

Gender	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Male	15(75.0)	16(80.0)	15(75.0)	46(76.7)
Female	5(25.0)	4(20.0)	5(25.0)	14(23.3)
Total	20(100.0)	20(100.0)	20(100.0)	60(100.0)

Figures in parenthesis indicate percent

3. 3. Population distribution

Altogether 364 numbers of people from the 60 sampled household were listed. Among them 46.4% were from Sunsari, 27.47% from Dhankuta and 26.13% were from Sankhuwasabha, respectively. In terms of gender wise distribution, 55.2% were male and 44.8% were female in sampled household. The distribution of population of the sample household by gender and district is presented in Table 2.

Table 2. Distribution of population of the sample household by gender and districts (2017)

Gender	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Male	97(57.4)	53(53.0)	51(53.7)	201(55.2)
Female	72(42.6)	47(47.0)	44(46.3)	163(44.8)
Total	169(46.4)	100(27.47)	95(26.13)	364(100.0)

Figures in parenthesis indicate percent

3. 4. Economically active population

Economically active populations are the population belonging to the age group of 15-59 years that have productive capacity as considered by the government of Nepal. In line with the main theme of program as guided by Youth focused commercial vegetable farming guideline 2014 all the 60 sampled participant of program were of economically active age

group i.e. 15-59 years. The distribution of economically active population household is presented in Figure 3.

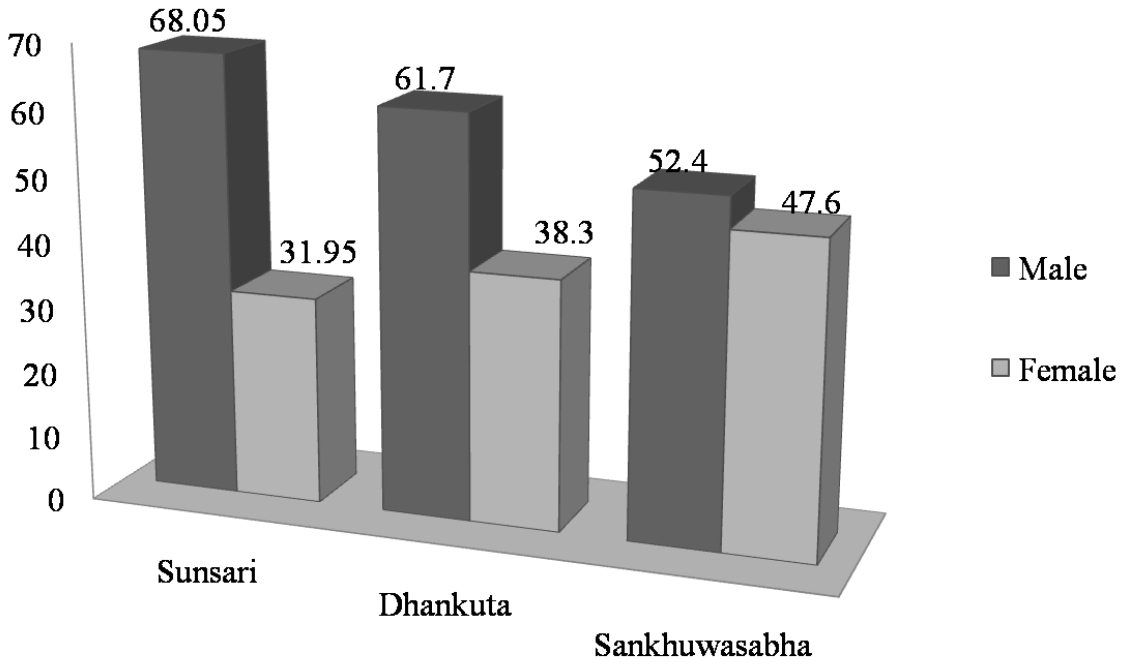


Fig. 3. Distribution of economically active population by gender and districts (2017)

3. 5. Educational status of respondent

Table 3. Educational status of respondents by districts (2017)

Education level	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Illiterate	0 (0.0)	1(5.0)	0 (0.0)	1(1.7)
Primary	2 (10.0)	3 (15.0)	3 (15.0)	8 (13.3)
Lower Secondary	3 (15.0)	4 (20.0)	4 (20.0)	11 (18.3)
Secondary	12 (60.0)	11 (55.0)	11 (55.0)	34 (56.7)
Higher level	3 (15.0)	1 (5.0)	2 (10.0)	6(10.0)
Total	20(100.0)	20 (100.0)	20 (100.0)	60 (100)

Figures in parenthesis indicate percent

The educational level of the surveyed household was categorized into five groups. They were Illiterate (who cannot read and write), Primary level (schooling up to five classes), Lower Secondary level (class up to 8), Secondary level (class up to SLC) and Higher level (above secondary level). A large proportion of respondents were educated up to secondary level (56.7%). Similarly, 18.3 percent, 13.3 percent and 10 percent respondent were educated up to Lower secondary, primary and higher level respectively. Only 1.7 percent of the respondents were found to be illiterate (Table 3).

3. 6. Type of farmer participated

Youth focused commercial vegetable farming program guideline has targeted farmers returned from aboard and those in process of going abroad for employment as focused participant. It aims to stop the process for youth migration to third country for job. In the surveyed districts majority of participants (50 percent) were either returned from abroad or in process of going aboard, which is in line with the theme of guideline. Detail participants type is shown in the Table no 4.

Table 4. Type of farmer participated by districts (2017)

Type of participant involved in program	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Returned from abroad	9 (45.0)	9(45.0)	7 (35.0)	25(41.7)
Processing to go abroad	2 (10.0)	0 (0.0)	0 (0.0)	2 (3.3)
Processing for passport	3 (15.0)	0 (0.0)	0 (0.0)	3 (5.0)
Involved in farming for long	6 (30.0)	9 (45.0)	13 (65.0)	28 (46.7)
Recently involved in farming	0 (0.0)	2 (10.0)	0 (0.0)	2 (3.3)
Total	20(100.0)	20 (100.0)	20 (100.0)	60 (100)

Figures in parenthesis indicate percent

3. 7. Types of vegetables grown

Farmers have to cultivate vegetables for minimum two seasons after being selected in the program. Most of the participants cultivated vegetable for three seasons; winter, spring and rainy. Although the season of cultivation of same vegetable differs with the altitude, vegetables like cauliflower, cabbage, broccoli, radish, okra, brinjal, tomato, sweet peeper, pea, pumpkin, summer squash, green beans, cucumber, bitter gourd, bottle gourd etc. were the main vegetables grown by participants of this program.

3. 8. Season wise per ropani income

In the sampled households, vegetable are mainly grown in winter, spring and rainy season. The study showed that per ropani income from winter vegetable was high as

compared to income from spring and rainy season vegetables. The analysis shows that mean total income from cultivation of vegetable (in winter, spring and rainy season) on same piece of land was found higher in Sankhuwasabha (NPR 48398.13±5150.85) followed by Sunsari (NPR 40615.95±4819.719) and Dhankuta (NPR 33127.23±4762.432). Moreover, winter season vegetable yielded more revenue in Sunsari district whereas rainy and spring season yielded more revenue in Dhankuta and Sankhuwasabha respectively Table 5.

Table 5. Season wise per ropani income of the sample household by districts (2017)

Season wise Income per ropani	Sunsari	Dhankuta	Sankhuwasabha
	Mean ± SE	Mean ± SE	Mean ± SE
Winter	15656.10±1628.69	12923.11±1859.61	13416.87±1888.07
Spring	13567.82±1744.11	7120.69±1230.47	17646.66±1653.74
Rainy	11392.01±1446.90	13083.42±1672.34	17334.58±1609.02
Total Income	40615.95±4819.71	33127.23±4762.43	48398.13±5150.85

SE = Standard Error.

3. 9. Continuity of vegetable farming

The Table 6 showed the continuity of vegetable farming by respondents after participating in youth focused vegetable production program. To find out to what percentage of vegetable grower continued vegetable farming as a primary occupation, question about continuation of farming enterprise was asked in two major categories continued and discontinued. Majority of the respondents (95.0%) were continuing their vegetable farming while 5 percent were found to discontinue their farming businesses.

Table 6. Continuation of vegetable farming by respondent by districts (2017)

Continuation of vegetable farming	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Continued	19(95.00)	18(90.00)	20(100.00)	57(95.00)
Discontinued	1(5.00)	2(10.00)	0(0.00)	3(5.00)
Total	20(100.00)	20(100.00)	20(100.00)	60(100.0)

Figures in parenthesis indicate percent

3. 10. Training Period

Training mainly brings changes in the knowledge, skill and attitude of person. Table 7 shows the training days received by participants after being selected in the program. Majority of respondents, 86.7%, received a training program of 3 days whereas others received training for a period of 7 days. Difference in training days may be due to the fact that respondents surveyed were selected from programs of different fiscal year.

Table 7. Training days received by participants of program by districts (2017)

Training Period	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
3 days	16(80.00)	16(80.00)	20(100.00)	52(86.70)
7 days	4(20.00)	4(20.00)	0(0.00)	8(13.30)

3. 11. Duration of Training

Table 8 shows the duration of training received by respondents after participating in this program. To find out to what percentages of participants found duration of training sufficient, question was asked in two major categories sufficient and insufficient. Majority of the respondents (53.30%) said training duration was insufficient to acquire the whole knowledge required for vegetable farming while 46.70 percent said training duration was sufficient.

Table 8. Sufficiency of training duration received by respondent by districts (2017)

Duration of Training	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Sufficient	6(30.00)	14(70.00)	8(40.00)	28(46.70)
Insufficient	14(70.00)	6(30.00)	12(60.00)	32(53.30)
Total	20(100.00)	20(100.00)	20(100.00)	60(100.0)

Figures in parenthesis indicate percent

3. 12. Farmers interest in foreign employment after participation in program

Youth focused commercial vegetable farming program guideline has targeted farmers returned from aboard and those in process of going abroad for employment, as focused participants. It aims to stop the process for youth migration to third country for job. In the surveyed districts majority of participants (96.70 percent) were not interested to go abroad for employment after participation in program, this is in line with the theme of guideline. Detail is shown in the Table no 9.

Table 9. Interest in foreign employment after participation in programme (2017)

Interest in foreign employment	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Yes	1(5.00)	0(0.00)	1(5.00)	2(3.30)
No	19(95.00)	20(100.00)	19(95.00)	58(96.70)
Total	20(100.00)	20(100.00)	20(100.00)	60(100.0)

Figures in parenthesis indicate percent

3. 13. Selling of products

Generally, four types of selling practices were found in the surveyed area i.e. selling in hat bazaar by farmer him/herself, selling to the local traders, selling from collection centers and selling via agents (Figure 4). Selling of products in hat bazaar by farmers themselves was the most commonly preferred system of selling by the respondents. Details on selling practices adopted by farmers are shown in Figure 4.

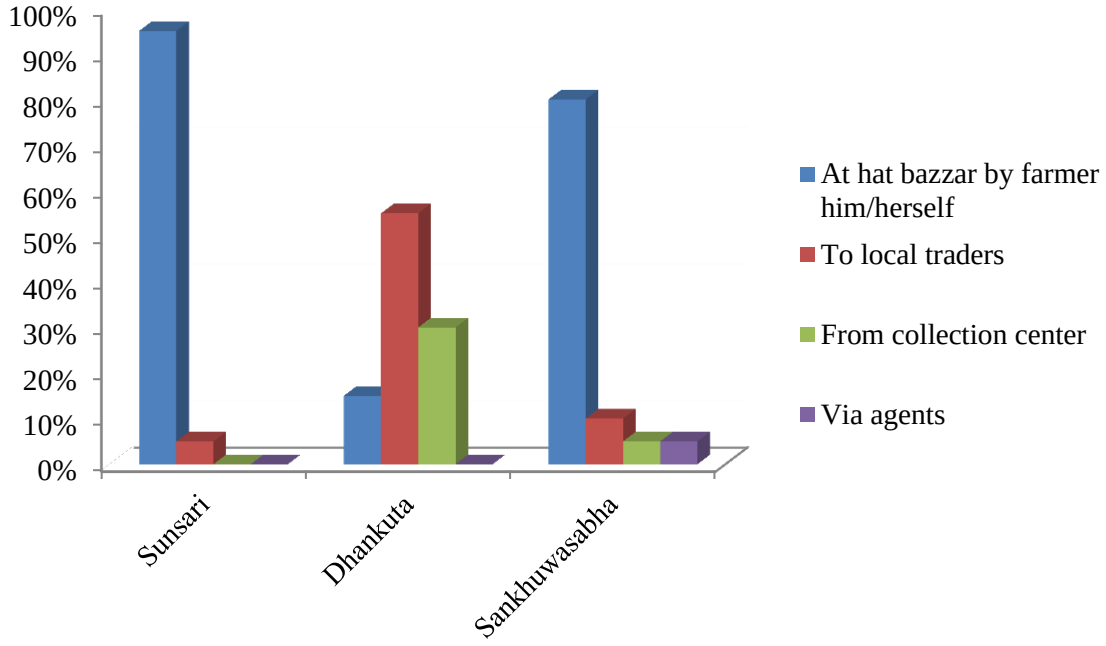


Fig. 4. Selling of vegetable products by respondents (2017)

3. 14. Problem in marketing of farm products

Table 10 shows various problems faced y producers in marketing of produced goods. Majority of participants faced transportation (51.7%) as major problem in selling of

vegetables. It may be due to the fact that two third of respondents were either from hills or mid-hills where transportation is the major hindrance of development.

Table 10. Problem in marketing of farm products (2017)

Problems	Districts			Total
	Sunsari	Dhankuta	Sankhuwasabha	
Lower price of products	6(30.00)	2(10.00)	5(25.00)	13(21.70)
Transportation	5(25.00)	13(65.00)	13(65.00)	31(51.70)
Traders vested interests	9(45.00)	5(25.00)	2(10.00)	16(26.70)
Total	20(100.00)	20(100.00)	20(100.00)	60(100.0)

Figures in parenthesis indicate percent

4. CONCLUSIONS

The present impact study of "Youth Focused Vegetable Production Program" was undertaken with the objective to assess the program achievement, effects (outcomes) and impact. The study was conducted in the three districts of EDR during February 2017. The survey districts were Sunsari from terai, Dhankuta form mid hill and Sankhuwasava from high hill and altogether 60 farmers were surveyed 20 from each districts.

The YFVPP was launched and implemented by VDD through DADOs at the district level for three years from 013/14 to 015/16. In the FY 013/14, 25 districts were selected as pilot districts and for next two years the program was implemented in all 75 districts. Altogether 9893 youth farmers were covered by this program out of which 2273 (23%) were females.

The salient findings of this impact study are presented below:

- The sampled participants were of economically active age group i.e. 15-59 years and the distribution of economically active population in the sampled household is 44.2%.
- Majority of the respondents were educated up to secondary level (56.7%). Similarly, 18.3%, 13.3% and 10% respondent were educated up to Lower secondary, primary and higher level respectively. Only 1.7% of the respondents were found to be illiterate.
- Majority of participants (50%) had returned from abroad or in process of going aboard.
- The study showed that per ropani income from winter vegetable was high as compared to income from spring and rainy season vegetables.
- Majority of the respondents (95.0%) were continuing their vegetable farming while 5 percent were found to discontinue their farming businesses after participating in youth focused vegetable production program.

- Majority of participants (96.70 percent) were not interested to go abroad for employment after participation in program.
- Selling of products in hat bazaar by farmers themselves was the most commonly preferred system of selling comprising 63.3 %t of respondents. Other practices were selling to the local traders, selling from collection centers and selling via agents.
- Majority of participants faced transportation (51.7%) as major problem in selling of vegetables.

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