

Survey of marketable vegetables and edible fruits in Dharan, eastern Nepal

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Abstract

A total 77 types of vegetables and 33 fruits were recorded from the markets of Dharan during the period of one year. Among them, 11 vegetables viz. *Agaricus bisporus*, *Allium cepa*, *A. sativum*, *Capsicum annum*, *Coriandrum sativum*, *Dolichos lablab*, *Lycopersicon esculentum*, *Solanum melongena*, *S. tuberosum*, *Vigna sinensis* and *Zingiber officinale* and 5 fruits viz., *Citrus aruntifolia*, *Coccus nucifera*, *Musa paradisiaca*, *Punica granatum* and *Pyrus malus* were found in all months. Nineteen vegetables appeared only in winter, 21 only in summer and 30 in both winter and summer seasons but not throughout the year. Similarly, 11 fruits were available in winter, 9 in summer and 8 fruits occurred in both seasons but not throughout the year. Forty seven vegetables and 14 fruits were cultivated locally and 31 vegetables and 5 fruits were procured from other places. Fourteen vegetables and 8 fruits were brought to the market from wild habitats. Vegetables and fruits supplied from Hilly area and Terai plains were also noted. The most expensive vegetable and fruit were Mushrooms and pomegranate, respectively. Vegetable prices started to decrease from December and remained low during January, February and March; started to increase from April and reached at climax in May and June. Generally, the price of fruits was high from April to July.

Key words: Vegetable, fruit, Gundruk, Yangben, edible ferns, price survey, Dharan

Introduction

Vegetables and fruits are essential for human health as they provide energy, protein, vitamins and minerals. In Nepal, cereals provide larger amount of energy (i.e., 88%) in daily diet. Due to health awareness and important nutritive values of vegetables and fruits, the per capita consumption of vegetables in Nepal has increased from 49 kg/person/year/ to 60 kg/person/year, but remains still below the human vegetable nutritional requirement i.e., 104 kg/person/year (HMG/N, 2006). Malnutrition is a major public health problem in Nepal and its main cause is our cereal based diet (Rai *et al.*, 2002). Several kinds of epidemic diseases are caused due to nutrient deficiency. The most significant nutritional disorder is Protein-Energy Malnutrition, Vitamin A deficiency, Iodine Deficiency Disorders (IDD) and Fe deficiency anemia (Rai *et al.*, 2002).

The history of development of vegetables in Nepal dates back in early forties; however, its rapid development was started from 1972 when Vegetable Development Division (VDD)

was established in the Department of Agriculture (Awasthi, 2003). At present, there are more than 247 cultivated vegetable crops throughout the world and more than 50 vegetable crops are common in Nepal. Due to wide range of climatic conditions ranging from tropical to alpine temperate, it is possible to grow almost all types of vegetables in Nepal. The average productivity of vegetables and fruits in Nepal has varied between 9-12 MT/ha over the last decade. The productivity of vegetables has increased from 9.5 to 12.2 MT/ha between 1998 and 2007 whereas the productivity of fruits fluctuated between 10.5 and 9.5 MT/ha during the same year (Kakra & Bhattacharjee, 2009).

Vegetables are less risky, fast growing and best sources of income in comparison to other cereal crops. Due to the market access and increasing demand of vegetables, area for cultivation and productivity of vegetables is also increasing over the years. According to the data of Kalimati Fruits and Vegetable Market Development Board, locally produced and internally supplied vegetables were 87%, while only 13% was imported from India and others countries. Before 15 years the local production met only 13% demand and the rest was imported. An efficient market information system can play a vital role to increase the income of producer farmers and regularize supply in the market. Commercialization of vegetable cultivation requires establishing markets and trading centers with adequate storage facilities close to farmer's production centers.

Dharan (Lat. 26°49'N and Long. 87°16'E; Elevation 349 msl) is a beautiful and multicultural city situated at the foothills of the Mahabharat range in Sunsari district, eastern Nepal. It is a trading centre for vegetables and fruits as it lies at the junction of hilly region and the Terai plains. It is the largest and most well-developed wholesale vegetable markets in the eastern Nepal. Generally, rainy season vegetables are procured here from north hilly districts (*viz.*, Dhankuta, Bhojpur, Sunsari, Terathum and Sankhuwashawa) to supply to the south Terai plain of Nepal and India, as the production is very negligible in Terai due to heavy rainfall and waterlogged condition. Just opposite, in winter, the products are imported here from terai and India to supply into the hilly areas. The major vegetables traded in this market are tomato, chili, cabbage, cucumber and cauliflower (USAID, 2011). Many local people are engaged in this business for maintaining their livelihood.

Literature reveal that Balakrishnan *et al.* (1981), Sangwan (1989) and Jordan *et al.* (1998) have studied the prices of potatoes in Indian markets. Similarly, Thirupathi (1997) and Babu (2002) have studied the marketing and price of fruits in India. In context of Nepal, such study has not been carried out before, except some works in Kathmandu valley. An attempt has been made to survey the vegetable and fruit markets in Dharan to understand the seasonal and monthly availability and fluctuations in the rate of prices throughout the year.

Methodology

Extensive survey of vegetables and fruits sold in the local market of Dharan Municipality was carried out for one year from October, 2011 to September, 2012. Vegetable and fruit markets were visited on the first day of every month to know the availability, types and prices of vegetables and fruits present. For this, five permanent shopkeepers were selected for questionnaire. Information about commonly available vegetables and fruits, their rout of supply, current prices etc., were recorded.

Results

In the present study, 77 vegetables belonging to 58 genera and 28 families and 33 fruits belonging to 20 genera and 16 families were recorded in one year from Dharan including their average monthly prices (Tab. 1).

The largest genus of vegetable was *Brassica* with 7 species followed by *Capsicum* 3 sp., *Cucumis* 3 sp. and so on and the largest family was Cucurbitaceae with 20 plants followed by Brassicaceae and Fabaceae 10 plants each, Solanaceae 8 plants and so on. Similarly, the largest genus of fruit was *Citrus* with 9 species followed by *Pyrus* 3 sp. and so on and largest family was Rutaceae with 10 plants followed by Rosaceae 5 plants and so on.

Eleven vegetables viz., *Agaricus bisporus*, *Allium cepa*, *A. sativum*, *Capsicum annum*, *Coriandrum sativum*, *Dolichos lablab*, *Lycopersicon esculentum*, *Solanum melongena*, *S. tuberosum*, *Vigna sinensis* and *Zingiber officinale* and 5 fruits viz., *Citrus aruntifolia*, *Coccus nucifera*, *Musa paradisiaca*, *Punica granatum* and *Pyrus malus* were present in all the months throughout the year in Dharan (Tabs. 1 and 2). Nineteen vegetables (*Allium cepa* leaf, *A. sativum* leaf, *Alocasia indicum*, *Benicasa hispida*, *Brassica oleraceae*, *B. rapa*, *Chenopodium album*, *Colocassia antiquorum*, *Cucurbita moschata*, *Cyclanthera pedata*, *Dioscorea alata*, *D. hamiltoni*, *Ipomoea batatus*, *Lathyrus sativus* *Lepidium sativum*, *Manihot esculenta*, *Pisum sativum*, *Sechium edule* root and *Vicia fava*) appeared only in winter season. Similarly, 21 vegetables (*Amanita vaginata*, *Artrocarpus heterophyllus*, *Astraeus hygrometricus*, *Bauhinia variegata*, *Capsicum frutescens* var. *grossum*, *Crateva unilocularis*, *Cucumis melo* var. *utilissimus*, *Cucurbita maxima*, *Dryopteris cochleata*, *D. splendens*, *Ficus lacor*, *Luffa acutangula*, *Moringa oleifera*, *Musa paradisiaca* spathe, *Ophioglossum vulgatum*, young shoots of *Sechium edule*, *Smilax aspera*, *Tamarindus indica*, *Tectaria macrodonta*, *Tinospora cordifolia* and *Trichosanthes anguina*) were seen only in the summer. Thirty vegetables were found both in winter and summer season but not throughout the year were *Abelmoschus esculentus*, *Agaricus campestris*, *Amaranthus caudatus*, *Anthum sowa*, *Bambusa tulda*, *Beta vulgaris*, *Brassica campestris* *B. juncea*, *B. juncea* var. *folicosa*, *B. oleracea* var. *botrytis*, *B. oleraceae* var. *capitata*, *Capsicum frutescens* var. *conoides*, *Colocassia esculenta*, *Corchorus capsularis*, *Cucumis sativus*, *Cucurbita maxima*, *Cyphomandra betaca*, *Daucas carota* var. *sativa*, *Fagopyrum esculentum*, *Glycine max* green pod, *Lagenaria siceraria*, *Luffa cylindrica*, *Momordica charantia*, *Raphanus sativa*, *Rorippa nasturtium-aquaticum*, *Sechium edule*, *Spinacia oleraceae* var. *inerrus*, *Trichosanthes dioica*, *Trigonella foenum-graceum* and *Urtica dioica*. *Brassica* was the winter vegetable but except *B. rapa*, all were available in the market in both seasons.

Vegetables available in the market for maximum period of 10 months were *Agaricus campestris*, *Brassica juncea* var. *folicosa*, *B. oleraceae* var. *capitata*, *Raphanus sativa* and *Rorippa nasturtium-aquaticum*; those available for 9 months were *Amaranthus caudatus*, *Brassica oleracea* var. *botrytis*, *Cucumis sativus* and *Daucas carota* var. *sativa*; vegetables available for 8 months were *Capsicum frutescens* var. *conoides*, *Cucurbita maxima*, *Momordica charantia*, *Sechium edule* and *Urtica dioica*; and those available for 7 months were *Anthum sowa*, *Cyphomandra betaca*, *Lagenaria siceraria* and *Trichosanthes dioica*. *Ophioglossum vulgatum* was seen in the market for only one month whereas *Amanita*

vaginata, *Astraeus hygrometricus*, *Bauhinia variegata*, *Brassica rapa*, *Crateva unilocularis*, *Cucumis melo* var. *utilissimus* and *Ficus lacor* were seen for two months only.

Similarly, 11 fruits (*Citrus aurantium*, *C. junos*, *C. limettioides*, *C. maxima*, *C. medica*, *C. reticulata*, *C. sinensis*, *Rhus parviflora*, *R. semialata*, *Zizyphus jujube* and *Z. mauritiana*) were found only in winter, 9 fruits (*Ananas comosus*, *Citrullus lanatus*, *Litchi chinensis*, *Mangifera indica*, *Prunus domestica*, *P. domestica* sub sp. *instiata*, *Schleichera oleosa*, *Syzygium cumini* and *Trapa bispinosa*) were found only in summer and 8 fruits (*Annona squamosa*, *Carica papaya*, *Citrus lemon*, *Phyllanthus emblica*, *Psidium guajava*, *Pyrus communis*, *P. pashia* and *Vitis vinifera*) were found in both seasons but not throughout the year. The winter is the season for *Citrus* as cultivated fruits and *Rhus* and *Zizyphus* as wild fruits.

The fruits available in the market for maximum period of 7 months was *Phyllanthus emblica*; followed by *Citrus reticulata* (6 months); *Ananas comosus*, *Carica papaya*, *Citrus lemon*, *Psidium guajava*, *Vitis vinifera* (5 months) and so on. *Trapa bispinosa* was available in the market for only one month. Similarly, *Citrus junos*, *C. limettioides*, *C. maxima*, *C. medica*, *Prunus domestica* sub. sp. *instiata*, *Schleichera oleosa*, *Syzygium cumini* and *Zizyphus jujuba* lasted in the market for two months.

There were about 47 vegetables (onion leaf, garlic leaf, amaranthus leaf, Indian dil, jack fruit, bamboo shoot, tuberous gourd, Indian rape, leaf mustard, colocasia leaf, co-co-yam, coriander, cucumber, tender parts of pumpkin shoot, vegetable marrow, young pumpkin, yam, hyacinth bean, buck-wheat, sweet potato, bottle gourd, peper cress, tomato topioca cassava, bitter gourd, drum-stick, banana flower, pea, radish, brinjal, potato, fenu-greek, broad bean, cow pea, ginger etc.) and 14 fruits (papaya, pommelo pompelmous, litchi, mango, banana, plum etc) produced and supplied from nearby areas in and around Dharan and 31 vegetables and 5 fruits were imported from outside. Fourteen vegetables (padkey chayau, devre chayau, tusa tama, koiralo, karkalo, bantarul, rani neuro, danthe neuro, kavro, jibre sag, sim sag, kukur daino, kali neuro, sisnoo) and 8 fruits (amala, mayel, bhakki amilo, kusum, jamun, satibayar, kasibayer, bayer) were brought to the market from wild habitat.

The vegetables generally supplied from Hills were bamboo shoot, camel's foot, mustard leaf, cauliflower, cabbage, turnip, capsicum chilly, cherry pepper, coriander leaf, garlic pear, cucumber, young pumpkin, ripen pumpkin, tree tomato, yam, garden pea, hyacinth bean, dauthe neuro, common fig, soyabean pod, sweet potato, peper cress, tomato, chatel gourd, adder's tongue, radish, tender parts of chyote christopine, chyote christopine, green briers, brinjal, potato, kali neuro, gurjo, stinging nettle, stinging flower, broad bean, cow pea, ginger, caygua, edible fern shoot, padkey chayau, devra chayau and the fruits were lime, lemon otaheite, sweet lime, citron, loose skinned orange, Nepal sweet orange, litchi, plum, pear, Nepal sumac, Chinese sumac and mayel.

Similarly, the vegetables generally supplied from Terai were lady's finger, onion bulb, onion leaf, giant taro, beet, cauliflower, brocauli, cabbage, squash, capsicum chilly, bethe sag, white jute sag, coriander leaf, snake cucumber, carrot, hyacinth bean, bottle gourd, grass-pea, ridge ghiroula, tomato, bitter gourd, drum stick, radish, tamarind, snake gourd, pointed gourd, cow pea and cultivated mushrooms. The fruits imported from Terai were pineapple, custard apple, papaya, watermelon, coconut, litchi, mango, banana, Indian

gooseberry, black plum, singhara nut, grapes and Indian plum. Apple was supplied from Jomsom (Western part of Nepal), and from India. Other fruits supplied from India were mango, grapes, seville orange, pomegranate, jujube fruit, Indian plum etc.

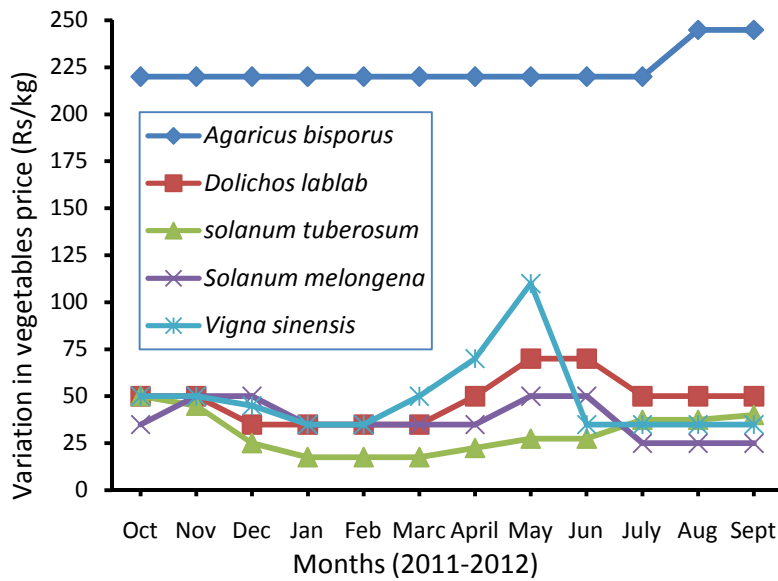


Figure 1. Monthly variations in the price of five major vegetables (found throughout the year) in Dharan.

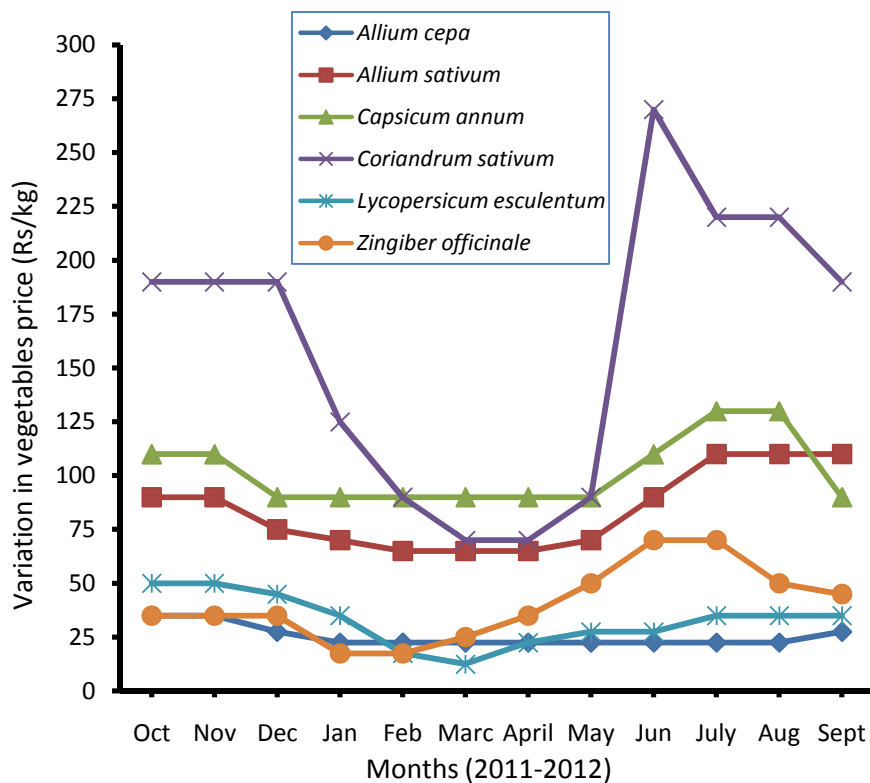


Figure 2. Monthly variations in the price of six minor vegetables (found throughout the year) in Dharan.

The expensive vegetables were the Mushrooms viz. *Amanita vaginata*, *Agaricus campestris*, *Astraeus hygrometricus* and *Agaricus bisporus* whose prices/kg were Rs. 750, 500, 450 and 245 respectively (Tab. 1). Stinging nettle's flower and fruits were packed and sold at Rs. 500/kg and its green leafy shoot at Rs 280/kg. The common trend in variation of prices of major vegetables was that the price started to decrease in December; remained low during January, February and March; started to raise in April and reached at climax in May and June (Fig. 1). For minor vegetables, the trend of price variation was quite different. Price started to decrease in September; remained low during January to April; then started to increase in May and reached climax in July and August (Fig. 2). Monthly variation on the price of coriander leaf was distinct but *Agaricus bisporus* and *Allium cepa* did not followed the general trend of variation.

Among the fruits, the expensive one was pomegranate which was 290/kg in the months of May, October and November (Tab. 2). It was followed by apple (240/kg in July), grape (180/kg in April), mango (100/kg in September), pineapple (80/kg in September) and so on. Generally, the price of fruits was high from April to July but in other months there was no regular pattern in variation of prices (Fig. 3).

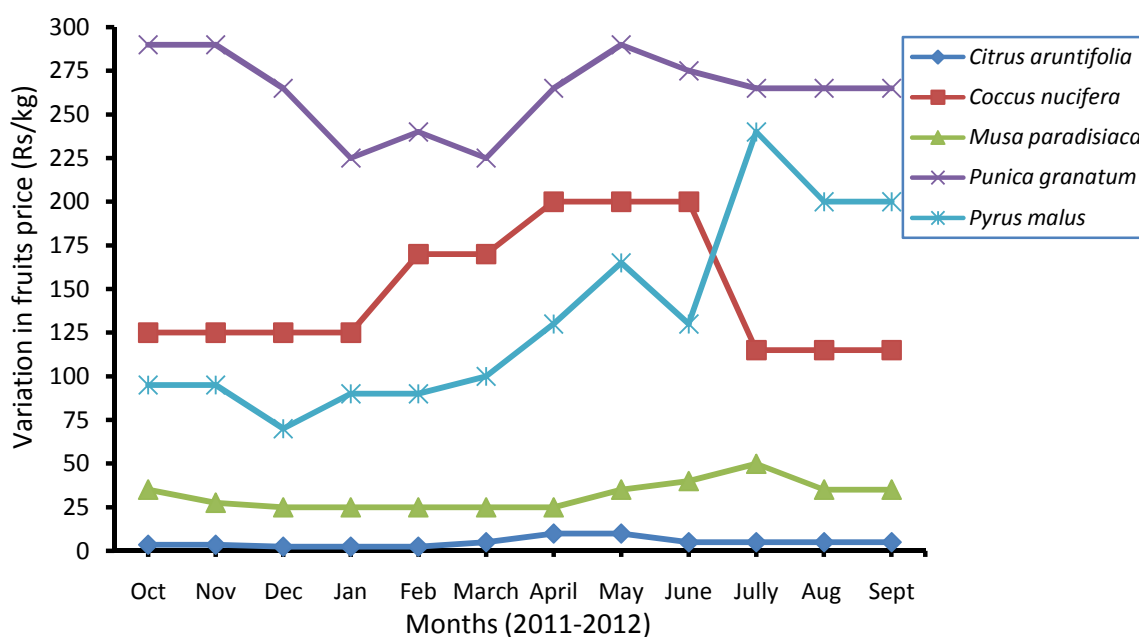


Figure 3. Monthly variations in the price of five fruits (found throughout the year) in Dharan.

Discussion

Advances in agronomy and developments in transport system have made every variety of vegetables and fruits available all year-round, although unseasoned vegetables and fruits do not taste as good as the seasonal ones (Shrestha, 1983).

Dharan is largest centre for fresh and delicious vegetables and fruits varieties. As vegetables and fruits are imported here both from terai and hills, most of these are available throughout

Table 1. Vegetables sold in the market of Dharan with their monthly price variations (2011/2012).

SN	Vegetables	Common name	Local name	Family	Price (Rs/kg)											
					Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep
1	<i>Abelmoschus esculentus</i> (L.) Moench.	Lady's finger	Bhindi	Malvaceae	70	-	-	-	-	-	90	70	32.5	25	25	50
2	<i>Agaricus bisporus</i> (Lange) Pitat	Cultivated mushroom	Chate chayau	Agaricaceae	220	220	220	220	220	220	220	220	220	220	245	245
3	<i>A. campestris</i> L.	Cultivated mushroom	Dallay chayau	Agaricaceae	500	500	500	450	450	450	450	450	450	450	-	-
4	<i>Allium cepa</i> L.	Onion bulb	Pyaj	Amaryllidaceae	35	35	27.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	27.5
		Onion leaf	Pyaj ko pat	Amaryllidaceae	-	-	25	25	35	35	-	-	-	-	-	-
5	<i>A. sativum</i> L.	Garlic bulb	Lashun	Amaryllidaceae	90	90	75	70	65	65	65	70	90	110	110	110
		Garlic leaf	Lashun ko pat	Amaryllidaceae	-	-	50	50	35	45	-	-	-	-	-	-
6	<i>Alocasia indicum</i> (Roxb.) Schott.	Giant Taro	Oal	Araceae	-	-	-	50	50	35	-	-	-	-	-	-
7	<i>Amanita vaginata</i> (Bull.) Lam.	Grisette	Devre chayau	Amanitaceae	-	-	-	-	-	-	-	-	750	750	-	-
8	<i>Amaranthus caudatus</i> L.	Amaranthus leaves	Latte sag	Amaranthaceae	35	35	50	50	50	-	-	-	25	25	25	35
9	<i>Anthum sowa</i> Roxb.	Indian dil	Sounp sag	Umbelliferae	65	65	45	42.5	32.5	35	35	-	-	-	-	-
10	<i>Artrocarpus heterophyllus</i> Lam.	Jack fruit	Rukh katahar	Moraceae	-	-	-	-	-	-	45	35	27.5	35	32.5	-
11	<i>Astraeus hygrometricus</i> (Pers.) Morgan	Hygroscopic Earthstar	Padkey chayau	Agaricaceae	-	-	-	-	-	-	-	-	450	450	-	-
12	<i>Bambusa tulda</i> Roxb.	Bamboo shoot	Tusa tama	Poaceae	50	70	-	-	-	-	-	-	70	50	32.5	35
13	<i>Bauhinia variegata</i> L.	Camels foot	Koiralo	Fabaceae	-	-	-	-	-	-	95	70	-	-	-	-
14	<i>Benicasa hispida</i> (Thunb.) Cogn.	Tuberous gourd	Kuvindo	Cucurbitaceae	-	45	45	45	-	-	-	-	-	-	-	-
15	<i>Beta vulgaris</i> L.	Beet	Guliyo moola	Chenopodiaceae	-	-	95	95	85	85	85	-	-	-	-	-
16	<i>Brassica campestris</i> L.	Indian rape	Tori sag	Brassicaceae	-	-	45	35	35	35	20	-	-	-	-	-
17	<i>B. juncea</i> (Rupr.) Sinskaya	Leaf mustard	Rayo duku sag	Brassicaceae	-	-	65	55	55	47.5	37.5	-	-	-	-	-
18	<i>B. juncea</i> var <i>folicosa</i> Bail.	Broad leaf mustard	Rayo sag	Brassicaceae	55	55	47.5	37.5	37.5	25	35	35	-	-	50	55

19	<i>B. oleracea</i> var. <i>botrytis</i> L.	Cauliflower	Phulkopi	Brassicaceae	75	67.5	35	22.5	22.5	20	-	-	-	90	90	75
20	<i>B. oleraceae</i> var. <i>capitata</i> L.	Cabbage	Banda kopi	Brassicaceae	35	35	22.5	22.5	11.5	11.5	-	-	22.5	17.5	17.5	17.5
21	<i>B. oleraceae</i> var. <i>italica</i> L.	Broccoli	Brocauli	Brassicaceae	-	75	50	53	27.5	22.5	-	-	-	-	-	-
22	<i>B. rapa</i> L.	Turnip	Salgam	Brassicaceae	-	80	70	-	-	-	-	-	-	-	-	-
23	<i>Capsicum annum</i> L.	Capsicum, Chilly	Khorsani	Solanaceae	110	110	90	90	90	90	90	90	110	130	130	90
24	<i>C. frutescens</i> L. var. <i>conoides</i> Bailey	Cherry pepper	Dallay ,,	Solanaceae	440	450	290	290	340	340	-	-	-	-	440	440
25	<i>C. frutescens</i> L. var. <i>grossum</i> Bailey	Bull-nose chilly	Bhende khursani	Solanaceae	-	-	-	-	-	-	90	100	100	100	110	-
26	<i>Chenopodium album</i> L.	Bethe	Bethu	Chenopodiaceae	-	-	85	70	70	70	-	-	-	-	-	-
27	<i>Colocasia antiquorum</i> Schott. var. <i>esculenta</i> L.	Co-Co, Yam, Taro, Arum	Pindalu	Araceae	-	-	25	25	27.5	35	-	-	-	-	-	-
28	<i>C. esculenta</i> (L.) Schott	Colocassia leaf	Karkalo	Araceae	50	50	-	-	-	-	-	-	-	-	-	50
29	<i>Corchorus capsularis</i> L.	White jute	Patuwa sag	Tiliaceae	-	-	-	-	-	35	35	35	35	-	-	-
30	<i>Coriandrum sativum</i> L.	Coriander	Dhaniya leaf	Umbelliferae	190	190	190	125	90	70	70	90	270	220	220	190
31	<i>Crateva unilocularis</i> Buch.-Ham.	Garlic pear	Sipligan	Capparaceae	-	-	-	-	-	-	90	90	-	-	-	-
32	<i>Cucumis sativus</i> L.	Cucumber	Pahade kakro	Cucurbitaceae	50	-	-	-	-	-	-	-	75	50	27.5	32.5
32		Cucumber	Kakro	Cucurbitaceae	35	50	50	-	-	-	70	65	27.5	27.5	22.5	22.5
33	<i>C. melo</i> L. var. <i>utilissimus</i> Duth. & Full.	Snake cucumber	Kakri	Cucurbitaceae	-	-	-	-	-	-	-	32.5	35	-	-	-
34	<i>Cucurbita maxima</i> D. Don	Leafy shoot	Pharsi munta	Cucurbitaceae	-	-	-	-	-	-	95	95	45	45	45	-
34		Vegetable marrow	Pharsi ko phul	Cucurbitaceae	-	-	-	-	-	-	-	45	45	45	-	-
34		Young pumpkin	Gatta	Cucurbitaceae	25	25	25	35	35	35	50	-	-	-	-	27.5
34		Ripen pumpkin	Pharsi	Cucurbitaceae	-	-	-	-	-	-	-	35	25	22.5	27.5	27.5
35	<i>C. moschata</i> (Duchesne ex Lam.) Duchesne ex Poiret	Squash	Guliyo pharsi	Cucurbitaceae	-	-	35	35	35	25	-	-	-	-	-	-

36	<i>Cyclanthera pedata</i> (L.) Schrader	Caygue	Chuchey karela	Cucurbitaceae	70	50	35	35	35	35	-	-	-	-	-	-
37	<i>Cyphomandra betaca</i> (Cav.) Sendt.	Tree tomato	Rukh bhenta	Solanaceae	70	70	60	45	35	35	-	-	-	-	-	70
38	<i>Daucas carota</i> L. var. <i>sativa</i> DC.	Carrot	Gazar	Umbelliferae	65	55	27.5	27.5	22.5	17.5	-	-	-	140	110	90
39	<i>Dioscorea alata</i> L.	White yam	Ghartarul	Dioscoreaceae	-	-	-	55	45	55	-	-	-	-	-	-
40	<i>D. hamiltoni</i> Hook. F.	Yam	Bantarul	Dioscoreaceae	-	-	-	95	85	75	-	-	-	-	-	-
41	<i>Dolichos lablab</i> L.	Hyacinth bean	Tate simi	Fabaceae	50	50	35	35	35	35	50	70	70	50	50	50
42	<i>Dryopteris cochleata</i> (D. Don)	Edible fern shoot	Rani neuro	Aspidiaceae	-	-	-	-	-	-	-	57.5	45	25	20	20
43	<i>D. splendens</i> (Hook.) Kuntze	Wild fern	Danthe neuro	Aspidiaceae	-	-	-	-	-	-	-	-	-	57.5	57.5	50
44	<i>Fagopyrum esculentum</i> Moench	Buck- wheat	Phapar sag	Polygonaceae	-	-	75	75	75	50	50	-	-	-	-	-
45	<i>Ficus lacor</i> Buch-Ham.	Common fig	Kavro	Moraceae	-	-	-	-	-	-	95	80	-	-	-	-
46	<i>Glycine max</i> (L.) Merr.	Soyabean pod	Bhatmas kosa	Fabaceae	50	-	-	-	-	-	-	-	-	-	35	35
47	<i>Ipomoea batatas</i> (L.) Lam.	Sweet potato	Suthuni	Convolvulaceae	-	-	-	45	45	45	-	-	-	-	-	-
48	<i>Lagenaria siceraria</i> (Molina) Standl.	Bottle gourd	Lauka	Cucurbitaceae	27.5	-	-	-	-	-	22.5	22.5	17.5	17.5	17.5	17.5
49	<i>Lathyrus sativus</i> L.	Grass-pea	Khesari sag	Fabaceae	-	-	-	37.5	35	35	-	-	-	-	-	-
50	<i>Lepidium sativum</i> L.	Peper cres	Chamsur sag	Brassicaceae	-	72.5	72.5	50	35	35	-	-	-	-	-	-
51	<i>Luffa acutangula</i> (L.) Roxb.	Ridge gourd	Pate ghiroula	Cucurbitaceae	-	-	-	-	-	-	-	90	50	35	35	50
52	<i>L. cylindrica</i> (L.) Roem.	Sponge gourd	Ghiroula	Cucurbitaceae	50	-	-	-	-	-	90	70	45	25	30	35
53	<i>Lycopersicum esculentum</i> Mill.	Tamato	Tamatar	Solanaceae	50	50	45	35	17.5	12.5	22.5	27.5	27.5	35	35	35
54	<i>Manihot esculenta</i> Crantz.	Topioca, Cassava	Simal tarul	Euphorbiaceae	-	-	-	30	27.5	30	-	-	-	-	-	-
55	<i>Momordica charantia</i> L.	Bitter gourd	Tite karela	Cucurbitaceae	50	50	-	-	-	-	90	70	25	25	25	35
56	<i>M. cochinchinensis</i> Spr.	Chathel gourd	Chatel	Cucurbitaceae	90	-	-	-	-	-	-	-	-	-	90	90
57	<i>Moringa oleifera</i> Lam.	Drumstick	Sahijan	Moringaceae	-	-	-	-	-	-	90	70	60	-	-	-
58	<i>Musa paradisiaca</i> L.	Banana flower	Bungo	Musaceae	-	-	-	-	-	-	-	-	-	35	35	35
59	<i>Ophioglossum vulgatum</i> L.	Adders tongue	Jibre sag	Ophioglossaceae	-	-	-	-	-	-	-	-	-	65	-	-

60	<i>Pisum sativum</i> L.	Garden pea	Kerau sag	Fabaceae	-	-	35	35	35	35	-	-	-	-	-	-
		Garden pea	Kerau kosa	Fabaceae	-	-	-	27.5	25	25	-	-	-	-	-	-
61	<i>Raphanus sativa</i> L.	Radish	Moola	Brassicaceae	40	30	22.5	22.5	17.5	11.5	11.5	-	-	35	22.5	17.5
62	<i>Rorippa nasturtium-aquaticum</i> (L) Hayek.	Water cress	Sim sag	Brassicaceae	35	35	-	-	50	50	50	50	22.5	22.5	27.5	35
63	<i>Sechium edule</i> (Jacq.) Sw.	Leafy shoot	Ishkus munta	Cucurbitaceae	-	-	-	-	-	-	95	95	45	45	45	50
		Chyote Christophine	Ishkus	Cucurbitaceae	17.5	17.5	12.5	12.5	17.5	22.5	-	-	-	-	22.5	17.5
		Chyote Christophine	Ishkus ko jara	Cucurbitaceae	85	80	70	55	55	55	-	-	-	-	-	-
64	<i>Smilax aspera</i> L.	Green briars	Kukur daino	Liliaceae	-	-	-	-	-	-	-	-	85	85	-	-
65	<i>Solanum melongena</i> L.	Brinjal	Baigun	Solanaceae	35	50	50	35	35	35	35	50	50	25	25	25
66	<i>S. tuberosum</i> L.	Potato	Aloo	Solanaceae	50	45	25	17.5	17.5	17.5	22.5	27.5	27.5	37.5	37.5	40
67	<i>Spinacia oleraceae</i> var <i>inerrus</i> L.	Round seeded spinach	Palungo sag	Chenopodiaceae	-	-	85	85	42.5	42.5	42.5	-	-	-	-	-
68	<i>Tamarindus indica</i> L.	Tamarind	Titri	Fabaceae	-	-	-	-	-	-	-	-	90	90	-	-
69	<i>Tectaria macrodonta</i> (Fee.) C.Chr.	Wild fern	Kali neuro	Aspidiaceae	-	-	-	-	-	-	-	62.5	45	35	32.5	-
70	<i>Tinospora cordifolia</i> (Wild.)Miers.	Gulantha tinospora	Gurjo	Menispermaceae	-	-	-	-	-	-	-	-	65	65	-	-
71	<i>Trichosanthes anguina</i> L.	Snake gourd	Chichindo	Cucurbitaceae	-	-	-	-	-	-	-	50	25	25	25	35
72	<i>T. dioca</i> Roxb.	Pointed gourd	Parwar	Cucurbitaceae	50	-	-	-	-	-	90	70	32.5	30	35	50
73	<i>Trigonella foenumgraceum</i> L.	Fenunagreek	Methi sag	Fabaceae	-	-	55	55	55	55	55	-	-	-	-	-
74	<i>Urtica dioca</i> L.	Stinging nettle	Sisnoo	Urticaceae	140	220	280	280	280	280	-	-	-	-	110	140
		Stinging nettle flower	Sisnoo phool	Urticaceae	180	260	500	500	-	-	-	-	-	-	-	180
75	<i>Vicia fava</i> L.	Broad bean	Bakula simi	Fabaceae	-	-	70	70	50	50	-	-	-	-	-	-
76	<i>Vigna sinensis</i> (L.) Savi ex Hassk.	Cow pea	Tane bodi	Fabaceae	50	50	45	35	35	50	70	110	35	35	35	35
77	<i>Zingiber officinale</i> Rosc.	Ginger	Aduwa	Zingiberaceae	35	35	35	17.5	17.5	25	35	50	70	70	50	45

- = Not available

Table 2. Edible fruits sold in the market of Dharan with their monthly price variations (2011/2012).

SN	Edible fruits	Common name	Local name	Family	Price (NRs/Kg)												
					Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	
1	<i>Ananas comosus</i> (L.) Merr.	Pineapple	Bhui katar	Bromeliaceae	-	-	-	-	-	-	-	-	55	50	55	65	80
2	<i>Annona squamosa</i> L.	Custard apple	Sarifa	Annonaceae	75	-	-	-	-	-	-	-	-	-	-	75	75
3	<i>Carica papaya</i> L.	Papaya	Mewa	Caricaceae	-	-	35	35	27.5	27.5	27.5	-	-	-	-	-	-
4	<i>Citrullus lanatus</i> (Thunb.) Mat. & Nakai	Watermelon	Tarbuja	Cucurbitaceae	-	-	-	-	-	-	35	35	37.5	-	-	-	-
5	<i>Citrus aruntifolia</i> (Christ.) Swinge	Lime	Kagati	Rutaceae	3.5/p	3.5/p	2.5/p	2.5/p	2.5/p	5/p	10/p	10/p	5/p	5/p	5/p	5/p	5/p
6	<i>C. aurantium</i> L.	Seville orange	Mausam	Rutaceae	85	85	85	-	-	-	-	-	-	-	-	-	-
7	<i>C. junos</i> Sieb.ex Tanaka	Yuzu lemon	Jyaamir	Rutaceae	-	12.5/p	15/p	-	-	-	-	-	-	-	-	-	-
8	<i>C. lemon</i> (L.) Burn.f.	Lemon (yellow)	Nibua	Rutaceae	10/p	10/p	10/p	10/p	-	-	-	-	-	-	-	-	10/p
9	<i>C. limettioides</i> Tanaka.	Sweet lime	Chaksi	Rutaceae	-	22.5/p	22.5/p	-	-	-	-	-	-	-	-	-	-
10	<i>C. maxima</i> (Burm.) Herr.	Pommelo pompelmous	Bhogate	Rutaceae	-	17.5/p	12.5/p	-	-	-	-	-	-	-	-	-	-
11	<i>C. medica</i> L.	Citron	Bimiro	Rutaceae	-	22.5/p	22.5/p	-	-	-	-	-	-	-	-	-	-
12	<i>C. reticulata</i> Blanco.	loose skinned orange	Suntala	Rutaceae	65	65	50	50	75	95	-	-	-	-	-	-	-
13	<i>C. sinensis</i> Osbeck.	Nepal sweet orange	Junar	Rutaceae	-	95	95	95	-	-	-	-	-	-	-	-	-
14	<i>Coccus nucifera</i> L.	Cocconut	Nariwal	Arecaceae	125	125	125	125	170	170	200	200	200	115	115	115	
15	<i>Litchi chinensis</i> Sonner.	Litchi	Licchi	Sapindaceae	-	-	-	-	-	-	-	17.5/d	17.5/d	22.5/d	-	-	
16	<i>Mangifera indica</i> L.	Mango	Amp	Anacardiaceae	-	-	-	-	-	-	-	-	50	60	70	100	
17	<i>Musa paradisiaca</i> L.	Banana	Kera	Musaceae	35/d	27.5/d	25/d	25/d	25/d	25/d	25/d	35/d	40/d	50/d	35/d	35/d	

18	<i>Phyllanthus emblica</i> L.	Indian gooseberry	Amala	Euphorbiaceae	35	35	27.5	22.5	22.5	22.5	-	-	-	-	-	35
19	<i>Prunus domestica</i> L.	Plum	Alu bakhara	Rosaceae	-	-	-	-	-	-	-	62.5	55	70	-	-
20	<i>P. domestica</i> L. sub. sp. <i>instiata</i> (L.)	Bullace	Alucha	Rosaceae	-	-	-	-	-	-	-	45	45	-	-	-
21	<i>Psidium guajava</i> L.	Guava	Amba	Myrtaceae	60	45	35	35	-	-	-	-	-	-	-	60
22	<i>Punica granatum</i> L.	Pomegranate	Anar	Punicaceae	290	290	265	225	240	225	265	290	275	265	265	265
23	<i>Pyrus communis</i> L.	Pear	Naspati	Rosaceae	35	-	-	-	-	-	-	-	-	27.5	35	35
24	<i>P. malus</i> L.	Apple	Syau	Rosaceae	95	95	70	90	90	100	130	165	230	240	200	200
25	<i>P. pashia</i> Ham.ex D.Don	Himalayan pear	Mayal, Mel	Rosaceae	35	35	-	-	-	-	-	-	-	-	-	35
26	<i>Rhus parviflora</i> Roxb.	Nepal sumac	Satibyar	Anacardiaceae	-	-	45	50	50	50	-	-	-	-	-	-
27	<i>R. semialata</i> Murr.	Chinese sumac	Bhakki amilo	Rutaceae	-	12.5/p	12.5/p	12.5/p	-	-	-	-	-	-	-	-
28	<i>Schleichera oleosa</i> (Lour.) Oken	Lac tree, Macassar oil tree, Ceylon oak	Kusum	Sapindaceae	-	-	-	-	-	-	-	-	-	60	70	-
29	<i>Syzygium cumini</i> (L.) Skeels	Black Plum	Jamun	Myrtaceae	-	-	-	-	-	-	-	-	-	75	90	-
30	<i>Trapa bispinosa</i> Roxb.	Singhara nut	Pani singhara	Trapaceae	-	-	-	-	-	-	-	35	-	-	-	-
31	<i>Vitis vinifera</i> L.	Grapes	Angur	Vitaceae	-	-	95	105	130	140	180	-	-	-	-	-
32	<i>Zizyphus jujuba</i> P. Mill.	Jujube fruit	Kasibayer Narkeli ruit	Rhamnaceae	-	-	-	-	85	90	-	-	-	-	-	-
33	<i>Z. mauritiana</i> Lam.	Indian plum,	Bayer	Rhamnaceae	-	-	35	35	25	22.5	-	-	-	-	-	-

p = piece, d = dozen, - = Not available

the year. In hills cauliflower and cabbage and also brinjals are largely grown in the early winter season and these are largely supplied in mid winter to the end of the season. It is seen that delicious hilly potatoes and tomatoes are largely supplied in summer seasons and as winter arises, terai tomatoes and potatoes are seen with the prices in descending order till the end of winter and also till the early summer season. Due to flooding in terai the rate is increased but as monsoons ends up the prices goes on descending order.

Winter is the season for fresh *Citrus* fruits and fresh vegetables. These *Citrus* fruits are very essential as they contain vitamin C that helps our body to fight against germs. Many vegetables and fruits are winter crops but also they are found whole year around. This is because of cold store facilities and also supply and availability from both terai and hilly regions throughout the year.

Summer vegetable and fruits are soft skinned and moisture filled and perfectly suited for hot climates. Most of the red and yellow vegetables and fruits contain beta-carotene, an antioxidant. It is known to increase immunity and prevent cancer disease. Greens are very good source of vitamin A, B6, C, riboflavin and folate and rich in minerals such as calcium, iron, magnesium, phosphorus, potassium, zinc and manganese.

Varieties of chilies like bird's eye chilli, jire khursani (*Capsicum microcarpum* DC.); bell pepper, bhende khursani (*Capsicum frutescens* var. *grossum* Bailey); long pepper, lapche khursani (*Capsicum frutescens* var. *verbasciculatum* Bailey); cone pepper, ghokre khursani (*Capsicum frutescens* var. *conoides* Bailey); cone pepper, chuchhe khursani (*Capsicum frutescens* var. *conoides* Bailey) were found in the market. The fermented vegetable items like 'sinki' prepared from radish, 'gundruk' made from mustard and radish leaf, sour taste tusa tama from bamboo bud, 'kinema' from soyabean and 'yengben' (lichen) were also found occasionally in Dharan.

Due to availability of junk foods, the demand of fresh vegetables and fruits are declining day by day in today's busy lives. On the contrary, vegetables and fruits are the only two food constituents that when taken on a regular basis can keep all kinds of diseases away. Various organic and inorganic fertilizers are used to increase the quantity and quality of fruits and vegetables so it is advisable to rinse all vegetables and fruits thoroughly before intake.

For wholesale market, September and October is the best season for wholesale prices, and February and March is the worst. Cucumber, onion and chili are in better price positions than tomato, cabbage and cauliflower (USAID, 2011). Farmers of this region who are able to produce off-season vegetables from May to November would get premium prices. There is fluctuation of rates due to various causes like, if there is heavy inpute from the sources, the rate decreases and if there are transportation strikes, the rate increases.

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