



E-ISSN: 2278-4136

P-ISSN: 2349-8234

www.phytojournal.com

JPP 2020; Sp9(2): 46-49

Received: 04-01-2020

Accepted: 06-02-2020

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Garrett's ranking analysis of constraints influencing off season vegetable growers in District Mohali

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Abstract

Economic losses due to constraints influencing off season vegetable growers are recognized as a major problem of vegetable growers in district Mohali of Punjab. This study was conducted with an objective to assess the farmers ranking on various constraints influencing off season vegetable growers in two blocks of district Mohali which were selected for the present study. Garrett's ranking technique was followed to analyse the constraints as perceived by vegetable farmers. Out of 60 vegetable farmers contacted, the study revealed that, the major challenges experienced by off season vegetable growers in block Majri & Kharar of district Mohali are high cost of inputs like seed, fertilizers, sarkanda grass (*Saccharum munja*) etc followed by high price of rented land followed by pest and diseases further followed by low market price/price fluctuation and shortage of labour etc. Therefore, necessary suitable steps should be taken by key stakeholders to remove the constraints identified.

Keywords: Constraints, Off season, Vegetable, Ranking

Introduction

Being an economically viable alternative livelihood option, off season vegetable farming has diversified the livelihood options of the farming communities and thereby has provided a stable annual income. Migratory vegetable growers hailing from Bareilly, Shahjahanpur, Rampur and Badaun districts of Uttar Pradesh have traditional inherited knowledge of this technique of growing vegetables during off season offering inhospitable environment. A baseline survey of 60 vegetable growers was conducted in district to gather information about the constraints influencing off season vegetable growers in district Mohali of Punjab. This community has been pursuing this profession in different parts of Punjab, having similar agro climatic analogues along the river/stream banks. They live in the huts made of sarkanda grass (*Saccharum munja*) erected nearby their fields for better care of their crops and watch and ward from animals like Neel Gai (*Boselaphus tragocamelus*), an Indian Blue Bull and an Asiatic antelope. Usually the land is hired from the local land owners on rent or lease @ Rs 30000-40000/acre/year. Each family normally cultivate on an average 5-8 acre area. For raising off season or early crop the young plants are protected against frost and wind by erecting hedge of *Saccharum munja* at an angle of about 45° in the trench across the direction of wind. During summers, the earlier erected grass is used as mulch and further spread on the ground that protects the vines and fruits from direct contact with warm soil. Despite the potentials, the off season vegetable cultivation in district Mohali seems not performing to the expectations owing to various reasons. Farmers' perspective as the leading stakeholders would facilitate the understanding of such a complexity. Therefore the study attempted to assess the constraints related to off season vegetable cultivation as perceived by the farmers. Constraints related to this as perceived by farmers would uncover useful information that would otherwise not become known. This information would be essential for future planning by the policy makers to meet the farmer needs.

Materials and Methods

The study was undertaken in two blocks of district Mohali of Punjab during 2018-19. These blocks were selected intentionally being the site for off season vegetable production. Five villages from both blocks Majri and Kharar were purposively selected on the basis of maximum vegetable production. A list of off season vegetable growers was prepared in each block and the total of 60 vegetable growers was selected randomly. Desired information related to the problems faced by the farmers in vegetable cultivation was gathered. Constraints were identified in off season vegetable cultivation using sarkanda grass and farmers were

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asked to rank the problems proposed to them. Garrett's Ranking Technique provides the change of orders of constraints and advantages into numerical scores. The prime advantage of this technique over simple frequency distribution is that the constraints are arranged based on their severity from the point of view of respondents (Zalkuwi *et al* 2015) [10]. Hence, the same number of respondents on two or more constraints may have been given different rank. Garrett's formula for converting ranks into percent is as below:

Percent position = $100 * (R_{ij} - 0.5) / N_j$ Where, R_{ij} = rank given for i th constraint by j th individual; N_j = number of constraint ranked by j th individual.

The per cent position of each rank will be converted into scores referring to the table given by Garrett and Woodworth (1969) [1]. For each factors, the scores of individual respondents will be added together and divided by the total number of the respondents for whom scores will be added. These mean scores for all the constraints will be arranged in descending order; the constraints will be accordingly ranked.

Constraints to off season vegetable Production

Garrett ranking technique has been used to analyse various factors influencing the production of off season vegetable by the respondents. The respondents were asked to rank the ten factors identified for the purpose of this studies as 1, 2, 3, 410 in order to know their preference in the selection of constraint. The calculated percentage position for the rank 1, 2, 3,.....10 and their correspondent Garrett table as show in Table 1, For factors, the total score is calculated by

multiplying the number of respondents ranking that factor as 1, 2, 3,....., and 10 Garrett and Woodworth (1969) [1].

Table 1: Percentage positions and their corresponding Garrett Table values

Rank	Percentage Position	Garrett Table
1	$100(1-0.5)/10$	5
2	$100(2-0.5)/10$	15
3	$100(3-0.5)/10$	25
4	$100(4-0.5)/10$	35
5	$100(5-0.5)/10$	45
6	$100(6-0.5)/10$	55
7	$100(7-0.5)/10$	65
8	$100(8-0.5)/10$	75
9	$100(9-0.5)/10$	85
10	$100(10-0.5)/10$	95

Results and Discussion

The result from table 2 indicates the various challenges/constraint experienced by the off season vegetable growers in the block Majri. The study revealed that, the top five major challenges experienced by off season vegetable growers in block Majri of district Mohali are high cost of inputs like seed, fertilizers, sarkanda grass etc. (77.30), high price of rented land (67.06), pest and diseases (62.50), low market price/price fluctuation (61.83), shortage of labour (54.63) etc. Besides this other challenges like stray wild animals (45.06), perishable nature of produce/poor storage facility (38.50), damage from frost (34.43), inadequate research and extension support (28.33) and lack of know how (24.33) were found to be limiting factors for off season vegetable cultivation.

Table 2: Ranking constraint associated with off season vegetable production in Block Majri

S. No	Factors	Rank										Total number of respondents	Total score in Block Majri	Total mean	Rank
		1	2	3	4	5	6	7	8	9	10				
1	High cost of inputs like Seed, Fertilizers, sarkanda grass etc	20	7	3	0	0	0	0	0	0	0	30	2319	77.30	I
2	Shortage of labour	0	0	5	9	13	1	1	1	0	0	30	1639	54.63	V
3	Low market price/price fluctuation	1	8	5	11	5	0	0	0	0	0	30	1855	61.83	IV
4	High price of rented land	9	6	4	7	1	3	0	0	0	0	30	2012	67.06	II
5	Stray wild animals	0	0	0	0	5	12	8	5	0	0	30	1352	45.06	VI
6	Damage from frost	0	0	0	0	0	8	3	7	5	7	30	1033	34.43	VIII
7	Pest and diseases	0	9	13	3	3	2	0	0	0	0	30	1875	62.50	III
8	Lack of Know how	0	0	0	0	0	0	7	3	08	12	30	730	24.33	X
9	Perishable nature of produce/Poor storage facility	0	0	0	0	3	4	7	7	9	0	30	1155	38.50	VII
10	Inadequate research and extension support	0	0	0	0	0	0	4	7	8	11	30	850	28.33	IX

The result from table 3 revealed the various challenges/constraint experienced by the off season vegetable growers in the block Kharar. The study revealed that, the top five major challenges experienced by off season vegetable growers in block Kharar of district Mohali are high cost of inputs like seed, fertilizers, sarkanda grass etc (78.40), high price of rented land (64.37), pest and diseases (63.43), low

market price/price fluctuation (62.83), shortage of labour (54.37) etc. Besides this other challenges like stray wild animals (46.07), perishable nature of produce/poor storage facility (36.17), damage from frost (32.87), inadequate research and extension support (31.37) and lack of know how (28.13) were limiting factors for off season vegetable cultivation in block Kharar.

Table 3: Ranking constraint associated with off season vegetable production in Block Kharar

S. No	Factors	Rank										Total number of respondents	Total score in Block Kharar	Total mean	Rank
		1	2	3	4	5	6	7	8	9	10				
1	High cost of inputs like Seed, Fertilizers, sarkanda grass etc	21	9	0	0	0	0	0	0	0	0	30	2352	78.40	I
2	Shortage of labour	0	0	3	9	17	0	0	1	0	0	30	1631	54.37	V
3	Low market price/price fluctuation	0	12	5	9	4	0	0	0	0	0	30	1885	62.83	IV
4	High price of rented land	9	0	5	11	0	5	0	0	0	0	30	1931	64.37	II
5	Stray wild animals	0	0	0	0	8	12	5	5	0	0	30	1382	46.07	VI
6	Damage from frost	0	0	0	0	0	9	1	6	4	10	30	986	32.87	VIII
7	Pest and diseases	0	9	17	1	0	3	0	0	0	0	30	1903	63.43	III
8	Lack of Know how	0	0	0	0	0	0	9	0	8	13	30	844	28.13	X
9	Perishable nature of produce/Poor storage facility	0	0	0	0	1	1	9	8	11	0	30	1085	36.17	VII
10	Inadequate research and extension support	0	0	0	0	0	0	6	10	7	7	30	941	31.37	IX

The results (Table 2 & 3) indicated that high cost of inputs like seed, fertilizers, sarkanda grass etc. is the major constraint faced by farmers as majority of the farmers cannot afford to purchase the desired quantity needed to enhance vegetable productivity. This finding collaborates with Kwaghe *et al.* (2000) who reported high cost of important farm inputs militating against efficient farming. It also agreed with the findings of Tashkalma *et al.* (2010), Zalkuwi (2012)^[9] & Suryavanshi *et al.* (2019)^[6]. High price of rented land was next important constraint as farmers complained of high price of rented land during period of cultivation which in turn increases the input cost and further lead to less profit. As the growers are migratory in nature and take land on rent, lease or contract for farming. Due to availability of option of MSP (minimum support price) for major crops like wheat, Rice and Maize and high fertility of soil so higher price of rented land is another major constraint which has huge negative impact on profits. Such mechanisms were further reported in the studies of Krishnan and Narayanakumar (2010)^[4]. Among other constraints problem of pest and diseases was ranked third major constraint. As vegetables have more moisture content and thereby more attracted by pathogens and insects which in turn leads to more usage of pesticides etc. and further increase the overall production cost due to expenses incurred for management. This is in consonance with the findings of Zalkuwi (2011)^[8]. Farmers also complained of less market price/price fluctuation compared to other crops, which resulted in less profit as compared to other crops, that is why they prefer other crops which have minimum support price in market. However this can be overcome by the suitable alterations in the sowing/planting time or adjusting sowing time in such way so that early harvest or off season crop can be taken and remunerative returns can be fetched. Conversely, few growers believed that non-existence of number of intermediaries and protection from frequent price fluctuation would still make the contract growing system/rented land system more appropriate. As vegetable farming is intensive form of farming which requires labour for various field operations like field preparation, sowing, nursery raising, weed management, water management including various other intercultural operations. So shortage of skilled labour and higher wage is another problem which is a major constraint in off season vegetable production. The results are in consonance with the findings of Zalkuwi *et al.* (2015)^[10] and Ginigaddara and Lankapura (2018)^[2].

Conclusion

Based on the logical interpretations of the results, it is concluded that off season vegetable farming is perceived as an alternative livelihood option for these migratory

communities which is a source of income generation and livelihood for them. It has been also suggested that off season vegetable cultivation needs lot of technical expertise. There are variations in the type of constraints that farmers faced related to their ability to comprehend the problem. To minimise the economical loss due to these constraints, key stakeholders should take suitable steps to remove the constraints identified. Conducting more number of extension activities, training programmes, awareness programmes, use of ICT tools along with mass media is the need of the hour.

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