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## Economics of leafy vegetables cultivation as influenced of different growing conditions

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**Abstract**

Present investigation was laid out in Factorial Randomized Block Design (FRBD) with two growing conditions, open field ( $G_1$ ) and polyhouse ( $G_2$ ) with four leafy vegetables *viz.*, Amaranthus ( $V_1$ ), Beet leaf ( $V_2$ ), Coriander ( $V_3$ ) and Fenugreek ( $V_4$ ) comprising eight treatments replicated thrice. The cost of cultivation of leafy vegetables was maximum (Rs.1,62,848/ha) under polyhouse growing condition and recorded maximum values of gross monetary (Rs.3,84,875/ha), Net monetary (Rs.2,22,027/ha) returns and B: C ratio (2.36). Among the leafy vegetables low cost of cultivation (Rs.66,598/ha) was required for amaranthus. While, the highest gross monetary returns (Rs.2,76,800/ha), Net monetary returns (Rs.1,60,620/ha) and B: C ratio (2.15) was recorded in fenugreek. The fenugreek produced under polyhouse recorded the maximum values of gross monetary (Rs.4,45,600/ha), Net monetary (Rs.2,82,295/ha) returns and B: C ratio (2.72) and it was followed by coriander grown under polyhouse condition.

**Keywords:** Open field, polyhouse, leafy vegetables, economics

**Introduction**

Yield level of horticultural produce protected structures can be several times than those of open field conditions. The quality of produce is also produce superior and input use efficiencies are usually higher under such structures. More than 90 % of Indian farmers have land holding with an average farm size of about 1.57 hectare comprising nearly 55 % of the arable land. These farmers are resources-poor but are capable to sustain an intense and efficient agro- production system if provided with critical inputs like, technology, marketing and credit. However, growing leafy vegetables under protected conditions requires comparatively high input cost and good management practices, which have direct bearing on the economic viability of the production system (Mini and Krishnakumary, 2007) <sup>[5]</sup>. Studies on the cultivation of vegetables in poly houses have been limited to high valued vegetables like capsicum, tomato, cucumber etc. and although leafy vegetables are also often affected by the vagaries of weather elements in the open. In recent days farmers are also asking the economics of leafy vegetables under protected conditions. As information on these aspects is very scanty hence the present investigation was carried out.

**Material and Methods**

An investigation entitled "Influence of different growing conditions on growth, yield and quality of leafy vegetables" was undertaken at the experimental farm, Department of Horticulture, VNMKV, Parbhani, during *Kharif* season, 2016. The experiment was laid out in Factorial Randomized Block Design (FRBD) with two growing conditions, open field ( $G_1$ ) and polyhouse ( $G_2$ ) with four leafy vegetables *viz.*, Amaranthus ( $V_1$ ), Beet leaf ( $V_2$ ), Coriander ( $V_3$ ) and Fenugreek ( $V_4$ ) comprising eight treatments replicated thrice. The leafy vegetables were shown on 20 August 2016 by line sowing methods with 15 cm row to row spacing. The data on economics of cultivation of leafy vegetables were recorded in both growing conditions and subjected for statistical analysis as per Panse, V. G. and Sukhatme, P. V. (1985) <sup>[7]</sup>.

**Results and Discussion**

The economics of different leafy vegetables was influenced due to different growing conditions.

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**Cost of cultivation (Rs. /ha)**

There was lot of variation in cost of cultivation among different growing conditions. It is observed that, the minimum cost of cultivation (Rs.66,598 /ha) was required under open field condition and it was maximum (Rs.1,62,848 /ha) in polyhouse condition. Among leafy vegetables minimum cost of cultivation (Rs.1,11,600 /ha) was recorded in amaranthus, followed by beet leaf (Rs.1,13,180 /ha), while it was maximum (Rs.1,17,282 /ha) in coriander. Amaranthus

produced under open field recorded minimum (Rs.63,475 /ha) cost of cultivation, which was closely followed by beet leaf grown under open field (Rs.65,705 /ha), while it was maximum (Rs.1,65,047 /ha) in coriander produced under open field. These findings are also in agreement with the finding of Murthy *et al.* (2009) <sup>[6]</sup> and Sreedhara *et al.*, (2013) <sup>[9]</sup>. Kishore *et al.*, (2014) <sup>[2]</sup> also reported that, the production cost under polyhouse was about 1.5 times higher than the open field condition.

**Table:** Effect of growing conditions on economics of different leafy vegetables.

Treatment	Cost of cultivation (Rs./ha)	Gross monetary returns (Rs./ha)	Net monetary returns (Rs./ha)	Benefit: Cost Ratio
<b>Factor A: Growing condition (G)</b>				
G <sub>1</sub> : Open Field	66598	100450	33850	1.50
G <sub>2</sub> : Polyhouse	162848	384875	222027	2.36
<b>Factor B: Leafy vegetables (V)</b>				
V <sub>1</sub> : Amaranthus	111600	206400	94800	1.69
V <sub>2</sub> : Beet leaf	113830	233250	119420	1.89
V <sub>3</sub> : Coriander	117282	254200	136918	2.00
V <sub>4</sub> : Fenugreek	116180	276800	160620	2.15
<b>Growing condition (G) x Leafy vegetables (V)</b>				
G <sub>1</sub> V <sub>1</sub> : Amaranthus in open field	63475	83800	20325	1.32
G <sub>1</sub> V <sub>2</sub> : Beet leaf in open field	65705	98500	32795	1.50
G <sub>1</sub> V <sub>3</sub> : Coriander in open field	69157	111500	42343	1.61
G <sub>1</sub> V <sub>4</sub> : Fenugreek in open field	68055	108000	39945	1.59
G <sub>2</sub> V <sub>1</sub> : Amaranthus in polyhouse	159725	329000	169275	2.06
G <sub>2</sub> V <sub>2</sub> : Beet leaf in polyhouse	161955	368000	206045	2.27
G <sub>2</sub> V <sub>3</sub> : Coriander in polyhouse	165407	396900	232493	2.40
G <sub>2</sub> V <sub>4</sub> : Fenugreek in polyhouse	164305	445600	282295	2.72

**Gross monetary returns (Rs./ha)**

The gross monetary returns were differed due to growing conditions. The results showed that, the maximum gross monetary returns (Rs.3,84,875 /ha) was observed under polyhouse condition and minimum (Rs.1,00,450 /ha) in vegetable produced in open field condition. Among leafy vegetables maximum gross monetary returns (Rs.2,76,800 /ha) was recorded in fenugreek, followed by coriander (Rs.2,54,200 /ha) and beet leaf (Rs.2,33,250 /ha), while it was minimum (Rs.2,06,400 /ha) in amaranthus. Fenugreek produced under polyhouse recorded maximum (Rs.4,45,600 /ha) gross monetary returns, followed by coriander grown under polyhouse (Rs.3,96,900 /ha), while it was minimum (Rs.83,800 /ha) in amaranthus grown under open field. Similar results obtained by Sreedhara *et al.*, (2013) <sup>[9]</sup>. The results are close conformity with the findings of Kumar *et al.*, (2015) <sup>[4]</sup> and Kumar *et al.*, (2016).

**Net monetary returns (Rs./ha)**

The maximum net monetary returns (Rs.2,22,027 /ha) was obtained from the vegetable produced under polyhouse condition whereas, minimum (Rs.33,850 /ha) was obtained from vegetables grown in open field condition. Among leafy vegetables maximum net monetary returns (Rs.1,60,620 /ha) was recorded in fenugreek, followed by coriander (Rs.1,36,918 /ha), while it was minimum (Rs.94,800 /ha) in amaranthus. Fenugreek produced under polyhouse recorded maximum (Rs.2,82,295 /ha) net monetary returns, followed by coriander grown under polyhouse (Rs.2,32,493 /ha), while it was minimum (Rs.20,325 /ha) in amaranthus grown under open field. Maximum returns in fenugreek could be attributed to high market price for the produce. This could be also attributed to comparatively low supply of fenugreek during rainy season due to less area and production. Similar results obtained by Sharma *et al.*, (1992) studied the profitability of

vegetable crops under polyhouse conditions and reported that vegetable crops provided higher net returns under polyhouse conditions. These results are close in conformity with the findings of Murthy *et al.*, (2009) <sup>[6]</sup>, Kishore *et al.*, (2014) <sup>[2]</sup>, Kumar *et al.*, (2015) and Spehia (2015).

**B: C Ratio**

The highest (2.36) B: C ratio was recorded under polyhouse condition and it was minimum (1.50) in open field condition. High B: C ratio under polyhouse could be due to high yield of quality produce. Low B: C ratio for amaranthus in open field could be due low market rates and poor quality of the produce. Among leafy vegetables maximum B: C ratio was recorded in fenugreek (2.15) followed by coriander (2.00), and it was minimum (1.69) in amaranthus. Fenugreek produced under polyhouse recorded maximum (2.72) B: C ratio followed by coriander grown under polyhouse (2.40). High B: C ratio in fenugreek may be due to high market rates due to less supply, while, it was minimum (1.32) in amaranthus grown under open field. Similar results were also obtained Bhargava *et al.*, (2016) <sup>[11]</sup>.

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