Economics of Selected Spice (Fenugreek) and Traditional Crop (Wheat) in Yamunanagar district of Haryana: Comparative Analysis

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Abstract: This paper tries to find out the Economics of Selected Spice (Fenugreek) and Traditional Crop (Wheat) in Yamunanagar district of Haryana.fenugreek is also known as 'Methi.' It's grown in almost every corner of the country. Leaves and seeds are used for vegetable, flavoring, and medicinal purposes. Rajasthan, Madhya Pradesh, and Tamil Nadu are India's major fenugreek growing states. The present study was completely based on primary collected from spice (Fenugreek) and traditional crop (Wheat) grower farmers through a personal interview method with the help of a well-prepared pre-tested interview schedule for 2020-21. The sample of 80 respondents (who grew both spice and traditional crops) was randomly drawn from district Yamunanagar. Cost-benefit ratio is calculated as net returns divided by total cost. In the production of fenugreek, the cost-benefit ratio was 1:0.38. It showed that if a farmer invests Rs. one in the production or cultivation of fenugreek, he will get Rs. 0.36 as net profit. In the same way, in the production of wheat, the cost-benefit ratio was 1:0.24. It showed that if a farmer invests Rs. one in the production or cultivation of wheat, he will get Rs. 0.24 as net profit. Thus, the study's findings clearly highlighted that the cultivation of fenugreek is more profitable than wheat in the Yamunanagar district of Haryana. Further, the leading problems faced by farmers in the production of spices crops were high fluctuation in prices, high costs of quality seeds, fertilizers & pesticides, lack of soil testing facilities, poor technical knowledge, lack of finance, costly storage facilities, shortage of labor at the time sowing and harvesting, lack of efficient labor, and inadequate irrigation facilities.

Keywords:Cost-Benefit Ratio, Fenugreek and Wheat.

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Introduction: India produces more than 50 different spices and is the world's foremost producer, consumer, and supplier of spices and spice-related goods. In addition to numerous other spices, India is a significant supplier of chili, turmeric, cumin, and pepper. Additionally, the nation imports diverse spices to satisfy local taste preferences because Indian dishes would be completed without a variety of spices. The state that produces the most spices in India is Andhra Pradesh. The other important spice-producing states in India include Gujarat, Karnataka, Rajasthan, Tamil Nadu, Assam, Kerala, Madhya Pradesh, Maharashtra, Orissa, Uttar Pradesh, and West Bengal. The primary spice crop, chili, accounts for around 34 per cent of the nation's overall spices production and about 29 per cent of the area cultivated. Turmeric contributes 14 per cent of production and 6 per cent of the area, while garlic accounts for 19 and 5 per cent in production and area, respectively. Pepper provides 2 per cent of production and 9 per cent of the country's total area for spices, whereas seed spices account for 17 per cent of production and 41 per cent of the area (iasri).

Any economy should include the horticultural sector. Horticultural crops are high-value crops that give people the nourishing food they require. As fresh and value-added products, these commodities have enormous potential for domestic marketing and export. The production and management of fruits, vegetables, flowers, spices, mushrooms, and medicinal and aromatic plants are the responsibility of the horticulture department. Horticulture development has gained more significance in recent years. It has been discovered to be profitable for land use diversification, filling nutritional needs, increasing employment prospects, and improving return on investment per unit area. Crops used for horticulture are cash crops with higher returns per unit than conventional crops. As a result, farmers in Haryana have begun to cultivate horticulture crops as a distinct and profitable business. In 2018–19, there were 67.28, 438.39, 0.32, 11.12, and 5.96 thousand hectares of fruits, vegetables, medicinal and aromatic plants, spices, and flowers, respectively. Horticultural crops occupy 541.39 thousand hectares or 7.99 per cent of the state's total planted area. In the 2019–20 year, 10596.92 thousand tons of horticulture crops were produced (Hortharyan).

Due to the abovementioned schemes, the horticulture sector experienced remarkable increases in area, production, and productivity, which were 48.57, 137.73, and 60.05 percent, from 2009–10 to 2018–19, respectively. Due to their abundance of nutrients needed for a balanced diet, spices are the essential ingredients in meals daily. The spices are also helpful in terms of medicine and beauty. The major spices grown in Haryana include fenugreek, ginger, turmeric, and garlic (GOH 2019-2020).

*Fenugreek:*In the local language, fenugreek is also known as 'Methi.' It's grown in almost every corner of the country. Leaves and seeds are used for vegetable, flavoring, and medicinal purposes. Rajasthan, Madhya Pradesh, and Tamil Nadu are India's major fenugreek growing states.

- *Soil:* Fenugreek is grown in almost all soil types, but it gives the best results when grown in well-drained loamy and sandy loam soils.

- *Popular varieties of Fenugreek:* Some of the popular types of fenugreeks are ML 150, Kasuri, Methi No 47, Hissar Sonali, Methi no 14, and HM 219.

- *Sowing:* The best time for sowing fenugreek is the last week of October and the first week of November. Line spacing is 22.5 cm, and sows' seeds are on the bed at a 3-4 cm depth.

- *Irrigation of the Fenugreek:* Fenugreek requires one pre-sowing irrigation and three to four irrigations required after the sowing.

- *Harvesting of the fenugreek:* For vegetable purposes, crop harvesting can start 21-26 days after the sowing. After 90-100 days of sowing, it harvests for grain (ApniKheti).

Objectives:

1. To compare the cost-benefit ratio of selected spice crop and traditional crops in Haryana.

2. To highlight the problems faced by farmers.

Methodology:

The present study was completely based on primary collected from spice (Fenugreek)and traditional crop (Wheat)grower farmers through a personal interview method with the help of a well-prepared pre-tested interview schedule for 2020-21.The sample of 80 respondents (who grew both spice and traditional crops) was randomly drawn from district Yamunanagar.

Cost of Cultivation

To estimate the cost of cultivation of spice crops, the cost has been divided into two heads, i.e., variable cost and fixed cost.

The variable cost included various cost components:

i.   Preparation of land

ii.   Seed

iii. Sowing

iv.   Manures and fertilizers

v.   Irrigation

vi.   Weeding

vii. Plant protection materials

viii. Chemicals

ix.   Harvesting

In addition, the interest on working capital involved in the cultivation is also computed at the prevailing interest rate.

The fixed cost included various cost components:

i.   The rental value of land

ii.   Managerial charges

iii.   Risk factor

Finally, the total cost of cultivation is estimated using simple mathematical analysis.

Total Cost = Variable Cost + Fixed Cost

Gross Returns = Output × Sale Price

Net Returns = Gross Returns − Total Cost

Cost-Benefit Ratio

Cost-Benefit Ratio: To calculate the cost-benefit ratio, the following formula has been used:

CB Ratio = Net Return ÷ Total Cost

Result and Discussion:

Cost-Benefit Ratio of fenugreek and traditional crop (Wheat)cultivation along with the problems faced by farmers in the production of fenugreek crop in Yamunanagar district of Haryana have been discussed in the following heads:

(A) Cost-Benefit Ratio of Fenugreek and Traditional Crop (Wheat) Cultivation in Yamunanagar District of Haryana

Table 1 examined the comparative cost-benefit ratio of fenugreek and wheat crops in the Yamunanagar district of Haryana. From the total cost, the share of the total variable cost of the fenugreek crop was Rs. 48692.66 per hectare (45.30 %), including total operational costs (42.63 %) and interest on working capital (2.66 %). Further, total fixed costs include management charges (2.26 %), risk factors (2.26 %), the rental value of land (49.28 %), and interest on owned fixed capital (0.89 per cent). Hence, out of total cost, the share of the total fixed cost was

54.70 per cent (Rs. 58796.731 per hectare). On the other hand, the transportation cost's share was only Rs. 1562.50 per hectare (1.45 %).

On the other side, the costs borne by farmers in wheat production were variable costs (including operational costs and interest on working capital), fixed costs, and transportation costs. The share of the variable cost was 44.88 per cent (Rs. 47810.82 per hectare), including total operational costs (42.24 %) and interest on working capital (2.64 %). Moreover, total fixed costs include management charges (2.24 %), risk factors (2.24 %), the rental value of land (49.73 %), and interest on owned fixed capital (0.90 %). So, out of total cost, the share of the total fixed cost was 55.11 per cent (Rs. 58708.13 per hectare). Transportation cost share was only 1.72 per cent (Rs. 1837.50 per hectare).

The study highlighted that the production cost of fenugreek (Rs. 107488.97 per hectare) and wheat (Rs. 106518.95 per hectare) were almost the same. There was no noticeable difference between the cost of production. The cost of fenugreek seed was Rs. 2812.50 per hectare (2.62 % of the total cost), and the cost of wheat seed (Rs. 2656.25 per hectare) was 2.49 per cent of the total cost. The weeding cost of fenugreek (4.08 %) was marginally higher than the weeding cost of wheat (2.95 %). Whereas the harvesting cost of fenugreek (10.69 %) was higher than the cost of wheat (8.71 %). Overall, the operational cost of fenugreek was 42.63 per cent of the total production cost. Whereas the operational cost of wheat was 42.24 per cent of the total production cost. Hence, there was no considerable difference in the cultivation cost of both crops.

The total production of fenugreek was 26.25 quintals per hectare. Whereas wheat's production was measured at 58.75 quintals per hectare. Further, the sale price of fenugreek was Rs. 5650 per quintal in 2021-22. On the other side, wheat's sale price (main product) was Rs. 1975 per quintal, and the by-product of wheat was Rs. 10500 per hectare in 2021-22 in the study area.

The gross return of the fenugreek crop was Rs. 148312.50 per hectare. Whereas the gross return of the wheat crop was Rs. 132531.25 per hectare. However, the gross return of the

fenugreek crop was slightly higher than the gross returns of the wheat crop (in absolute figures). Because the price (in quintals) of fenugreek was greater than wheat crop. The net return was the difference between gross returns and total costs. The study found that the net return of fenugreek and wheat was Rs. 40823.53 and 26012.30 per hectare, respectively. However, the net return of the fenugreek crop was almost one & half of the net return of the rice crop. Thus, the production or cultivation of fenugreek is more beneficial to farmers. Overall, the production of fenugreek was less than wheat in quantity (quintals), but the price of fenugreek is comparatively higher than wheat. Hence, fenugreek is the more profitable crop.

The cost-benefit ratio shows the process used to measure the benefits of a decision and acted minus the costs associated with taking that action. Hence, the Cost-benefit ratio is calculated as net returns divided by total cost. In the production of fenugreek, the cost-benefit ratio was 1:0.38. It showed that if a farmer invests Rs. one in the production or cultivation of fenugreek, he will get Rs. 0.36 as net profit. In the same way, in the production of wheat, the cost-benefit ratio was 1:0.24. It showed that if a farmer invests Rs. one in the production or cultivation of wheat, he will get Rs. 0.24 as net profit. Thus, the study's findings clearly highlighted that the cultivation of fenugreek is more profitable than wheat in the Yamunanagar district of Haryana.

Table 1Cost-Benefit Ratio of Fenugreek and Traditional Crop (Wheat) Cultivation in Yamunanagar District of Haryana(*Rs. per hectare*)

Sr. No.	Fenugreek		Sr. No.	Wheat	
	Items	Cost		Items	Cost
1.	Land preparation	11062.50 (10.29)	1.	Land preparation	8843.75 (8.30)
2.	Seed	2812.50 (2.62)	2.	Seed	2656.25 (2.49)
3.	Sowing	2531.25 (2.35)	3.	Sowing	2437.50 (2.29)
4.	Plant protection (chemicals)	1657.80 (1.54)	4.	Plant protection (chemicals)	1268.75 (1.19)
5.	Farmyard manure (FYM)	2156.25 (2.00)	5.	Farmyard manure (FYM)	2156.25 (2.02)
6.	Fertilizer nutrients	3967.17 (3.69)	6.	Fertilizer nutrients	3603.12 (3.38)
7.	Weeding	4387.50 (4.08)	7.	Weeding	3143.75 (2.95)
8.	Irrigation charges	3390.62 (3.15)	8	Irrigation charges	8865.62 (8.32)
9.	Harvesting	11489.05 (10.69)	9.	Harvesting	9276.56 (8.71)

10.	Transportation cost		1562.50 (1.45)	10.	Transportation cost		1837.50 (1.72)
11.	Miscellaneous		811.25 (0.75)	11.	Miscellaneous		909.37 (0.85)
12.	Total operational cost (1 to 11)		45828.39(42.63)	12.	Total operational cost (1 to 11)		44998.42(42.24)
13.	Interest on working capital @12.5 per cent		2864.27(2.66)	13.	Interest on working capital @12.5 per cent		2812.40(2.64)
14.	Total variable cost (sub-total 12 to 13)		48692.66(45.30)	14.	Total variable cost (sub-total 12 to 13)		47810.82(44.88)
15.	Management charges @10 per cent of total variable cost		2434.63(2.26)	15.	Management charges @10 per cent of total variable cost		2390.54(2.24)
17.	Risk factor @10 per cent of total variable cost		2434.63(2.26)	17.	Risk factor @10 per cent of total variable cost		2390.54(2.24)
18.	Rental value of land		52968.72 (49.28)	18.	Rental value of land		52968.72 (49.73)
19.	Interest on fixed capital @10 per cent		958.33 (0.89)	19.	Interest on fixed capital @10 per cent		958.33 (0.90)
20.	Total fixed cost (sub-total 15 to 19)		58796.31(54.70)	20.	Total fixed cost (sub-total 15 to 19)		58708.13(55.11)
21.	Total Cost (sub-total 14 and 20)		107488.97(100)	21.	Total Cost (sub-total 14 and 20)		106518.95(100)
22.	Production	i. Main product (qtl)	26.25	22.	Production	i. Main product (qtl)	58.75
		ii. Sale price main product (Rs. /qtl)	5650.00			ii. Sale price main product (Rs. /qtl)	1975.00
		iii. By product (Rs.)	-			iii. By product (Rs.)	16500.00
		iv. Value of main product (i×ii)	148312.50			iv. Value of main product (i×ii)	116031.25
23.	Gross return [22 (iii + iv)]		148312.50	23.	Gross return [22 (iii + iv)]		132531.25
24.	Net return (23-21)		40823.53	24.	Net return (23-21)		26012.30
25.	CB ratio (24÷21)		1:0.38	25.	CB ratio (24÷21)		1:0.24

Source: Field survey

Note: The figures in the parentheses are the percentage of the total cost.

Thus, fenugreek was more beneficial crop than wheat in the Yamunanagar district of Haryana. The net return of fenugreek is almost one & half of the wheat crop. There were not much price fluctuations in this crop. Hence, overall, it is a profitable crop for farmers. But the probability of crop failure is also higher in fenugreek as compared to the wheat crop. It needs more weeding (causal labor) and hard work compared to wheat crop cultivation. The demand

for fenugreek is also less because it's used for making pickles and feeding cattle. So, the farmers preferred to cultivate wheat crop as compared to fenugreek crop.

(B)Problems Faced by farmers in the production of fenugreekcrop in Yamunanagar district of Haryana

The leading problems faced by farmers in the production of spices crops were high fluctuation in prices, high costs of quality seeds, fertilizers & pesticides, lack of soil testing facilities, poor technical knowledge, lack of finance, costly storage facilities, shortage of labor at the time sowing and harvesting, lack of efficient labor, and inadequate irrigation facilities. The findings of the section are mainly based on the information provided by surveyed farmers and the researcher's observations during the field survey which has been depicted in table 2.

Table 2Problems Faced by Farmers in the Production of Selected Spices Crops in district Yamunanagar(*Number of farmers*)

Sr. No.	Problems	Responses
		(Fenugreek)(N=80)
1.	**High fluctuations in the price of spices crops**	62 (77.50)
2.	**High cost of quality seed, fertilizers, and pesticide**	55 (68.75)
3.	**Lack of awareness of soil testing facility**	59 (73.75)
4.	**Poor technical knowledge**	59 (73.75)
5.	**Lack of finance**	51 (63.75)
6.	**Costly storage facilities**	36 (45.00)
7.	**Shortage of labor at the time of sowing and harvesting**	47 (58.75)
8.	**Lack of efficient labor**	13 (16.25)
9.	**Inadequate irrigation facilities**	00 (00.00)

Source: Field Survey

Note: Figures in parentheses are the percentage of the total farmer's response.

High Fluctuations in the price of spices crops: The study highlighted that the high fluctuations in the price of spices crops were one of the leading problems amongst the farmers. The farmers of Fenugreek (77.50 %) reported that high fluctuations in the prices of spices crops were the primary constraint in the production of these crops in more considerable extent in the corresponding districts. Because of the less short-term production and consumption elasticities, spices crop prices were unstable. Further, planting decisions are made without knowing the new crop's price. These decisions were taken based on estimated prices, not actual prices. As supply or demand varies, so do prices and rates. Prices will increase if there is a demand for a product and the supply starts to decline. Prices will decrease if supply grows more than the existing demand. Prices may fluctuate upward and downward when demand rises or falls if supply is comparatively static.

High costs of quality seeds, fertilizers, and pesticides: It is also a major problem among spice farmers. Because it required more investment at the time of sowing, farmers did not have enough funds to sustain such crops in larger areas. Hence, farmers preferred to sow traditional crops instead of spices crops in the larger area of agricultural land. Of the total number of surveyed farmers, 68.75 per cent reported it. Thus, it was the second major problem regarding the farming of spices crops amongst the farmers.

Lack of awareness of soil testing facility: Farmers do not have much awareness about soil testing facilities. Farmers can better understand their soil types and nutrient deficiencies through soil testing analysis, reduce the use of different chemicals and their volume, and compare the costs and benefits. About 79.06 per cent of fenugreek farmers in Yamunanagar district of Haryana reported it. The lack of knowledge was the major barrier to farmers adopting soil tests. The fact that soil tests may be undertaken to ensure soil quality, which could evaluate and improved, is generally unknown to farmers. The costs associated with the procedure were another factor in the lack of soil testing. It takes a lot of money to conduct effective soil tests. Thus, this was the third majorly reported problem by farmers in the sowing or producing spices crops.

Poor technical knowledge: Most farmers had poor technical knowledge about the spice's crops. In addition to eliminating environmental barriers, new technologies have significantly contributed to modern farming developments. These variables included irrigation, fertilizers, high-yielding seed varieties, insecticides/pesticides, farm equipment, financial institutions, etc. Further, 73.75 per cent of fenugreek growing farmers in Yamunanagar district of Haryana had the poor technical knowledge about the spice's crops. Thus, it was the fourth major problem amongst the farmers.

Lack of finance: Lack of finance is a major problem amongst spices farmers. Agriculture finance is one of the most important and basic challenges, especially for farmers. Only very few banks and commercial sectors provide it to farmers. Agriculture finance is required to buy agricultural instruments such as digging and tube wells, seeds, animals, well repairing, manure, making long-term improvements to the field, animal manure, paying wages, etc.

Further, 63.75 per cent of farmers reported this problem, respectively. It is the fifth major problem amongst farmers, as per responses recorded during the field survey. Because most of the farmers were indebted, they did not have enough money to finance such types of costly crops in larger areas. Hence, the government should provide financial support or aid, especially to marginal and small farmers of spices crops.

Costly storage facilities: The storage facilities are costly. Such types of facilities require a big investment in the construction of warehousing. Farmers fail to get this type of facility because of insufficient finance. Farmers (45.00%) of fenugreek reported it as a leading constraint in the sowing and farming of spices crops. In the unavailability of storage facilities, farmers must sell their produce at lower market prices during harvesting season. Hence, it is a crucial problem among farmers. The government must provide storage facilities to the farmers to get a reasonable price for their spice crops.

Shortage of labor at the time of sowing and harvesting: About 58.75 per cent of fenugreek farmers in Yamunanagar district of Haryana, respectively. They are facing the problem of availability of labor.

Lack of efficient labor: In the sowing and harvesting spices crops, efficient and skilled labor is required. But lack of efficient labor is another problem faced by farmers. About farmers (16.25 %) of fenugreek facing the problem regarding it. Overall, lack of efficient labor is also a leading problem for spices growers or farmers. The lack of efficient labor increased the demand for such labor, and farmers had to pay higher wages to hire them. Hence, it increased the cost of farming.

Inadequate irrigation facilities: Respondents are not facing the problems regarding the availability of irrigation facilities in Yamunanagar districts. There wereadequate facilities of irrigation.

(A)Suggestions

some suggestions derived from the results of the current study. These suggestions would contribute to maximize the returns from growing spice crops which are as follows:

❖ Government should set a minimum support price to secure higher returns on spice crops.

❖ Government should provide subsidies for farmers to receive a considerable payment for their produce.

❖ Government should investigate these items and suspend the licenses of enterprises that don't offer higher-quality seeds and pesticides.

❖ The horticultural department should impart the knowledgeregarding soil testing through a testing program like seminars, workshops, conferences, etc.

❖ The government must consistently organize workshops for farmers to give innovative technical knowledge, through seminars, workshops, and conferences. Furthermore, a campaign including print materials, radio, television, and helplines should be used to teach farmers about the crops used to produce spices.

❖ Credit facilities must be made available to farmers so they can easily pay for labor, farmyard manure, irrigation costs, and the rental value of land in addition to inputs like seed, fertilizer, insecticides, etc.

❖ It is important to concentrate on the skill development of the labor force involved in the production of spice crops to solve this problem. These skills are related to planting, picking weeds, processing, collecting, packing, polishing, etc. Therefore, the horticultural department and government should introduce programs.

❖ In a hilly area, government needs to find affordable public transport options for the products produced from spices.

❖ Government and the horticultural department should try to eliminate the intermediary role. Therefore, spice sales and purchases should be performed under government involvement.

❖ The government should take steps to lower experts' workloads so they can provide their best effort during duty days.

❖ Research should be conducted to evaluate the standard of spice crops, technology, equipment knowledge, current demand and supply gap, processing spices, and the export and import of spice crops.

Conclusion:

It can be concluded from above discussion that the cost-benefit ratio shows the process used to measure the benefits of a decision and acted minus the costs associated with taking that action. Hence, the Cost-benefit ratio is calculated as net returns divided by total cost. In the production of fenugreek, the cost-benefit ratio was 1:0.38. It showed that if a farmer invests Rs. one in the production or cultivation of fenugreek, he will get Rs. 0.36 as net profit. In the same way, in the production of wheat, the cost-benefit ratio was 1:0.24. It showed that if a farmer invests Rs. one in the production or cultivation of wheat, he will get Rs. 0.24 as net profit. Thus, the study's findings clearly highlighted that the cultivation of fenugreek is more profitable than

wheat in the Yamunanagar district of Haryana.

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