



An Economic analysis of Production and Marketing of medicinal plants in Northern India



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Background: Over 80 per cent of World's population relies on traditional medicine, largely plant based, for their primary health care as per WHO. India is one of the hot spots in Medicinal and Aromatic Plants (MAPs) in the world. India comprises of 16 different agro-climatic zones, 10 vegetation zones, 25 biotic provinces and 426 habitats for specific species and representing the twelve mega bio-diversity centers of the world. Out of 45000 plant species (nearly 20% of the global species), 3500 species are of medicinal value, 1100 species are used in different Indian System of Medicines. India produces herbal drugs valuing US\$920 million annually of which nearly US\$94 million is exported. Though nearly 650 – 700 species used in herbal industries, yet only 150 species are used commercially. In Indian sub-continent, the Ayurveda is the oldest medical system, which uses near about 2000 medicinal plant species. Thus MAPs have tremendous scope in India.

Research goal: The present research mainly focuses on the economic profitability, resource use efficiency and marketing of selected medicinal plants

Methodology:

The study is based on primary data collected from 118 respondent farmers of Safed Musli (*Chlorophytum borivillianum*), Sonamukhi (*Cassia angustifolia*) and Mulethi (*Glycyrrhiza glabra*).

Study area : Haryana state – 7 districts – 51 villages

Collection of data – Multi stage random sampling technique

Analytical tools: Multiple regression analysis : $Y = aX_1^{b_1} \cdot X_2^{b_2} \cdot X_3^{b_3} \cdot X_4^{b_4} \cdot X_5^{b_5} \cdot X_6^{b_6} \cdot U$
Where, Y = Gross return from medicinal plants, a = Intercept, X_1 = Land preparation (value in Rs.), X_2 = Planting material (Value in Rs.), X_3 = Manures and fertilizers (Rs. per acre), X_4 = Interculture and hoeing (Rs. per acre), X_5 = Irrigation expenses (Rs. per acre), X_6 = Primary processing (Rs. per acre), b_i (i = 1 to 6) indicate the regression coefficient of factor inputs.

Marginal Value Productivity (MVP) : $b_i \frac{Y}{X_i}$

Where, Y = Average gross return (in Rs.), X_i = Mean level of i^{th} resource, b_i = Production elasticity of i^{th} input



A. Mulethi
(*Glycyrrhiza glabra*)
B. Sonamukhi
(*Cassia angustifolia*)
C. Safed Musli
(*Chlorophytum borivillianum*)

Table 1: Economics of MAPs cultivation on sampled farms (Rs. per acre)

| Particulars | Safed Musli <i>Chlorophytum borivillianum</i> | Sonamukhi <i>Cassia angustifolia</i> | Mulethi <i>Glycyrrhiza glabra</i> |
|----------------------------|--|---|--------------------------------------|
| Variable cost | 135378.4 (74.32) | 2975 (27.39) | 19563.75 (41.58) |
| Total cost | 182152.30 (100) | 10859.2 (100) | 47043.68 (100) |
| Yield (kg.) | 490 | 382.5 | 2675 |
| Gross Return | 247052.6 | 6867.5 | 135625 |
| Returns over variable Cost | 106259.1 | 3714 | 113713.6 |
| Net return (Rs.) | 64900.4 | -3991.7 | 88581.3 |
| BCR (over variable cost) | 1.75 | 2.17 | 6.2 |
| BCR (over total cost) | 1.36 | 0.63 | 2.9 |

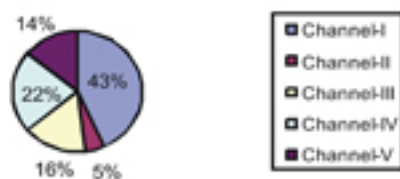
Table 2: Estimated production function for MAPs

| Variables | Safed Musli | Sonamukhi | Mulethi |
|-----------------------------------|-----------------|------------------|-----------------|
| Intercept (a) | -10.854 (7.144) | 3.269 (3.121) | 1.158 (0.780) |
| Land Preparation (X_1) | 0.590 (0.788) | -0.276 (0.222) | -0.114 (-0.98) |
| Planting Material (X_2) | 0.627** (0.471) | -3.150** (1.803) | -0.251* (0.114) |
| Manures and Fertilizers (X_3) | 1.041* (0.292) | 0.740** (0.515) | 0.858* (0.135) |
| Interculture and Hoeing (X_4) | 1.886* (0.467) | 4.559* (1.894) | 0.410* (0.107) |
| Irrigation charges (X_5) | - | -0.458** (0.312) | 0.356* (0.106) |
| b_i | 4.144 | 1.415 | 1.259 |
| R^2 | 0.756 | 0.615 | 0.986 |

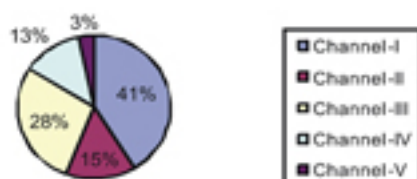
Table3: Marginal Value Product (MVP) and Marginal Factor Cost (MFC) ratio

| Variables | Safed Musli | Sonamukhi | Mulethi |
|-------------------------|-------------|-----------|---------|
| Land Preparation | 1.01 | -0.42 | -0.21 |
| Planting Material | 0.66 | -3.98 | -0.33 |
| Manures and Fertilizers | 1.45 | 1.09 | 1.25 |
| Interculture and hoeing | 2.57 | 7.96 | 0.75 |
| Irrigation charges | 1.75 | -0.71 | 0.57 |

Share of Maps growers in disposal of produce through various marketing channels



Quantity of MAPs sold through various channels



Conclusions: Mulethi was found to be the most lucrative option among selected MAPs followed by Safed Musli. Market channel-I (Producer-commission agent/local trader-processor-consumer) was found the most preferred channel through which 43 per cent of the growers sold their produce

Policy Implications: Development of adequate processing facilities and introduction of support price policy as in case of other crops is suggested to augment the development of MAPs.

Reference: Ghosh, S. P. 2000. "Medicinal and Aromatic Plants: Present Status & Future Perspective", *Indian Journal of Arecanut, Spices and Medicinal Plants*. 2: 145-147

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