

Income Generation through Medicinal and Aromatic Plants in Uttarakhand: A Case Study of District Dehradun

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Abstract

In search of better returns from the land, farmers have been resorting to cultivation of Medicinal and Aromatic plants (MAPs) instead of conventional agriculture. This study I try to examine the role of MAPs cultivation in income generation in Uttarakhand especially in District Dehradun. Present study based on field level information from Sahaspur block of Dehradun. The financial feasibility of important aromatic plants (Lemongrass) has been studied. It has been found that the returns are substantially higher from Lemongrass. In study area maximum farmers cultivated Lemongrass in their wasteland and degraded land which is not in use for cultivation purposes. So they get some return from this wasteland. The study has identified some problems that affect the popularity of MAPs cultivation; these include inadequate processing system, problem of fire, late payment of subsidy, lack of transport facilities and labor problem. It has been suggested that intensive efforts should be made to address these problems .We can also see that Investment in MAPs were found to be economically sound and financially feasible, farmers should be encouraged to take up the cultivation of the MAPs crop on large scale.

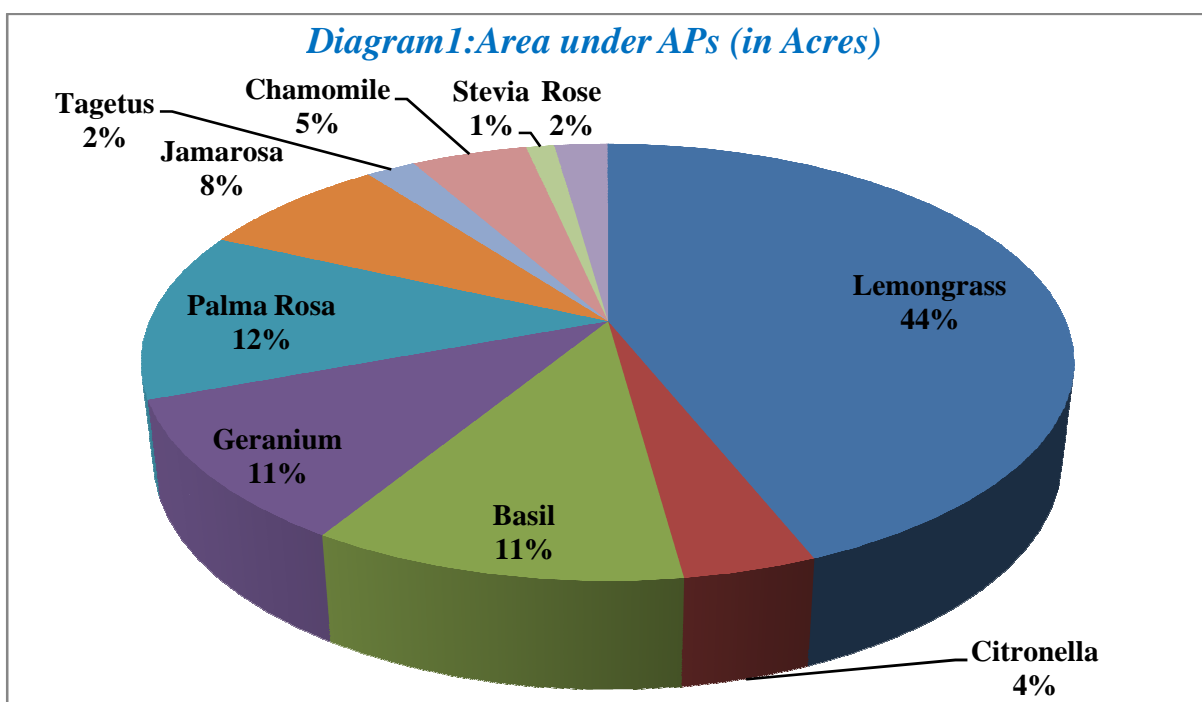
KEYWORDS- MAPs, Lemongrass, Wasteland, Degraded land, feasible, large scale.

INTRODUCTION - Uttarakhand is one of the most recent states on the political map of India (November 9, 2000) and due to its geographic and strategic location, it has been given 'Special Category Status' by Union of India. Uttarakhand popularly known as *Dev Bhumi* is widely believed to be the source of the centuries old traditional system of medicine called Ayurveda. The State is blessed with thousand of species; however, about 320 species have been identified having commonly growing. The forest department has reported about 175 species being commercially extracted and traded. It is estimated that the State is well positioned to generate revenue of more than Rs.1, 000 crores per annum through medicinal plants trade (Mattoo et al. 2004).The State Government in 2003 declared Uttarakhand as a "**Herbal State**". The State has established the Herbal Research and Development Institute at Gopeshwar in district Chamoli as a nodal agency to monitor developmental issues and for inventorization of MPs species in the state (Sati 2013). Under conservation scheme, the Government has established several herbal gardens such as at Mandal, Selaqui and Muni Ki Reti (Rishikesh) (Deshpande et al.2008). The National Medicinal Plant Board has identified about 32 species for cultivation out of which Government of Uttarakhand has laid emphasis on about 10, which have been chosen for cultivation in Uttarakhand (Mali, 2007). As per these estimates, 10 species are being cultivated commercially in the State and these species currently occupy about 170 acres (about 67 hectares) land in 2004 (Table 1).

Table 1: Area and Production of Important Aromatic Plants in Uttarakhand (2004)

Sl. No.	Species	Area (in acres)	Sl. No.	Species	Area (in acres)
1	Lemongrass	74.89	6	Jamarosa	13.50
2	Citronella	6.64	7	Tagetus	3.50
3	Basil	18.60	8	Chamomile	8.20
4	Geranium	18.02	9	Stevia	2.00
5	Palma Rosa	21.30	10	Rose	3.75
	Total	139.45		Total	30.95
	Grand Total	170.40			

Source: Herbal Research and Development Institute, Govt. of Uttaranchal, Dehradun



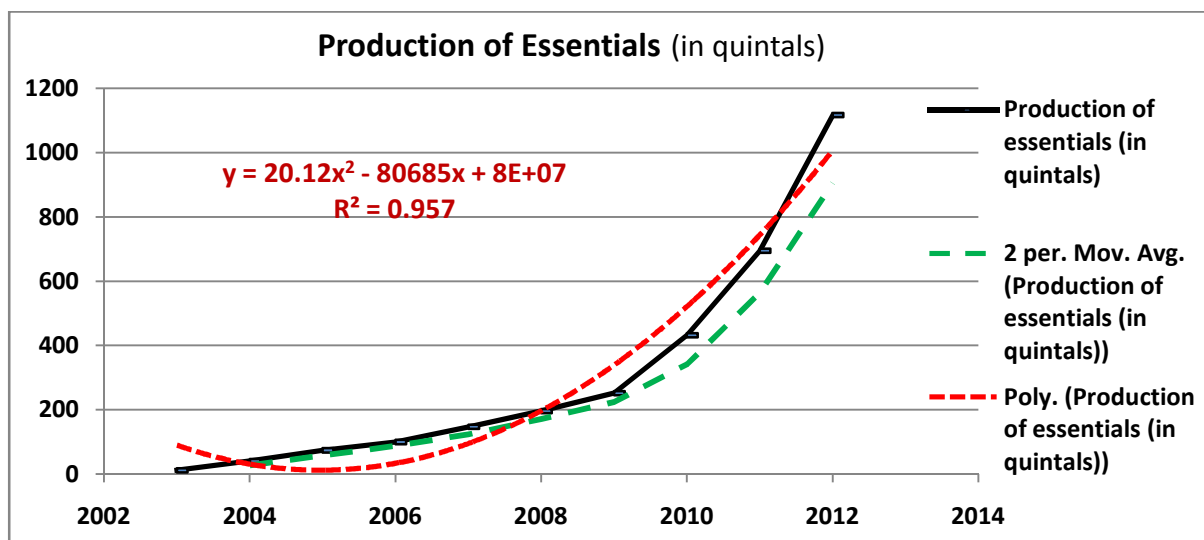
Of these, a single species Lemongrass alone accounts for more than 44 percent of the area while some others such as Stevia, Tagetus and Rose are being cultivated on less than 5 acres of land (Diagram.1.). The important districts identified for cultivation of the above plants are: Dehradun, Chamoli, Pithorgarh and U.S.Nagar. Uttarakhand has observed an increase in the area under cultivation of aromatic and medicinal plants. Table 1.2 shows that the number of farmers engaged in cultivation of aromatic plants in Uttarakhand has dramatically increased from 301 in 2003-04 to 10725 in 2012-13 and the area under aromatic plants has increased hundred-fold. Also the production of

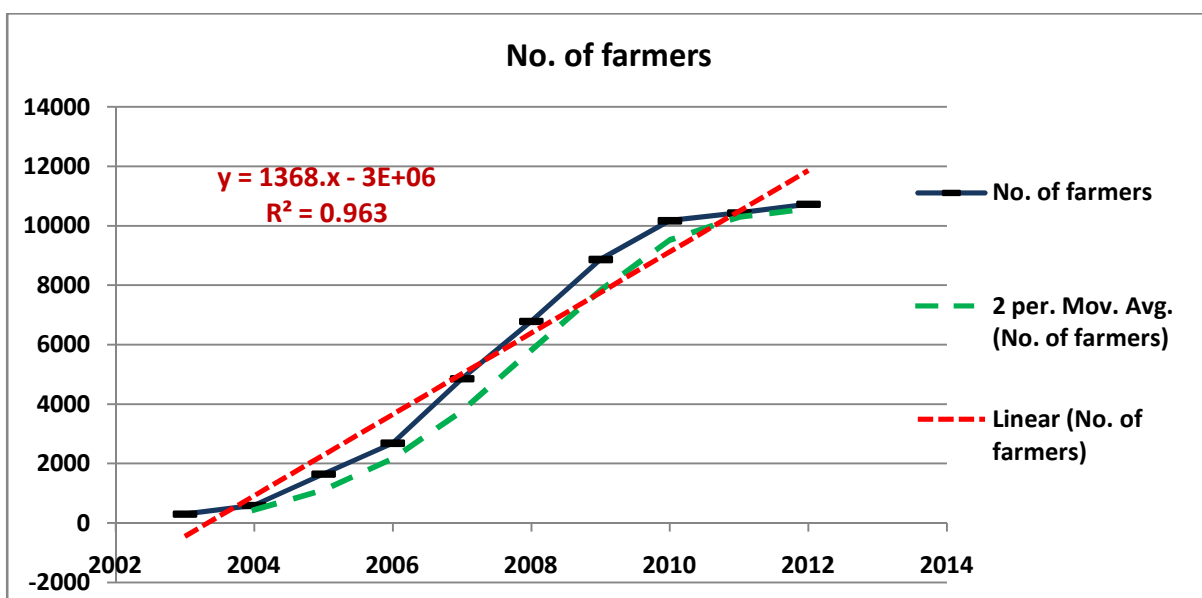
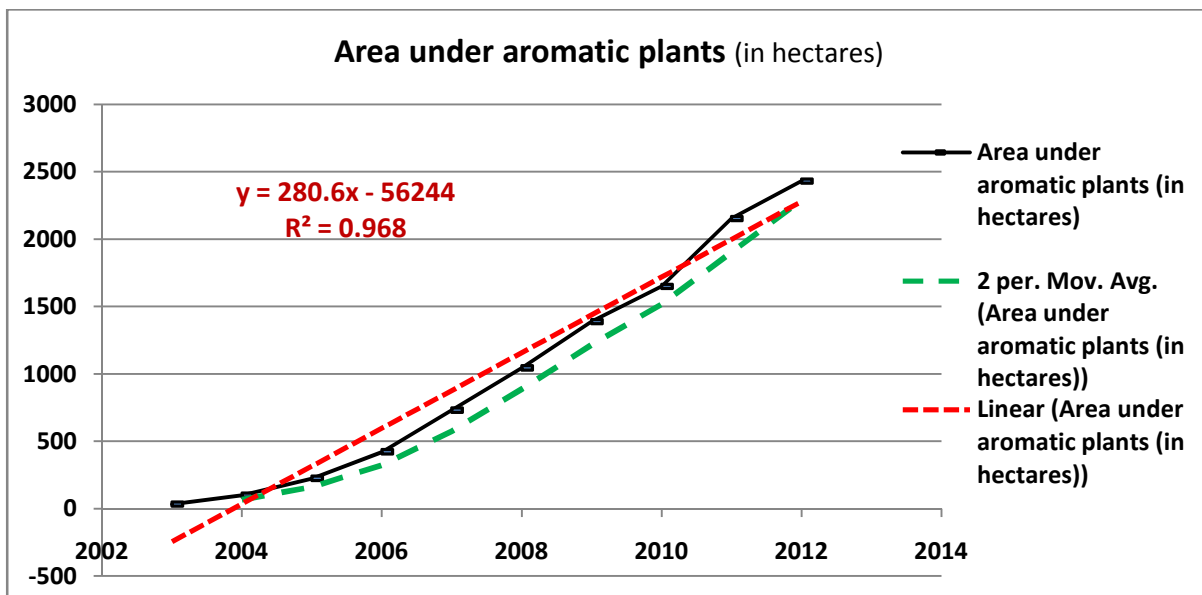
essential oils has increased ten times from 12 quintals in 2003-04 to 1117 quintals in 2012-13(Table 2).

Table 2: Aromatic plantation in Uttarakhand

Year	No. of farmers	Area under aromatic plants (in hectares)	Production of essentials (in quintals)
2003-04	301	34	12
2004-05	587	100	41
2005-06	1643	225	74
2006-07	2684	422	100
2007-08	4856	731	147
2008-09	6786	1045	196
2009-10	8869	1389	252
2010-11	10171	1651	432
2011-12	10430	2155	695
2012-13	10725	2432	1117

Source: Collected from Centre of Aromatic Plant, Dehradun.





This positive attitude of farmers towards aromatic plant cultivation is because of the high returns from this crop. Intercropping of aromatic plants with food grains can also help diversify the income basket for small and marginal farmers. Aromatic plants helped farmers to generate revenue of Rs. 35.38 Lakhs in 2006-07 and 63.40 Lakhs in 2011-12. Farmers can derive huge benefits by diversifying into the cultivation of aromatic plants. These benefits have been generated with the help of the Herbal Research and Development Institute (HRDI) that works on aromatic plants used in cosmetics, soaps, and perfumes. This positive attitudes of farmers towards MAPs cultivation is because of the high returns from this crop. Intercropping of aromatic plants with food grains can also help diversify the income basket for small and marginal farmers.

OBJECTIVES OF THE STUDY -The specific objectives of this study are:

- To review the existing market system of MAPs in study area.
- To understand the economics of cultivation/production of the selected MAPs, especially on the livelihood (income generation) aspects of MAPS cultivators.
- To identify the main problems related to MAPs facing by the farmers.

- Suggest suitable institutional and policy for accelerated development of MAPs in the Uttarakhand.

RESEARCH METHODOLOGY- This study was conducted to examine the role of MAPs in Income generation in Dehradun. So the methodology has to frame according this. This study uses Primary as well as Secondary data.

PRIMARY DATA - The study was conducted during June and July month in the Year 2013. To find out the economic potential of MAPs crop in Dehradun region, I selected Lemon-grass for my study. Lemon-grass was largely cultivated in Dehradun region. In Dehradun (Universe) there are 525 Aromatic Plants cultivators in six Blocks. One Block (Sahaspur) was selected by Random sampling technique for the detail study. There are 50 Lemongrass cultivators in Sahaspur Block. To evaluate the objective of study 25 Lemongrass cultivators of Sahaspur Block are chosen from lottery method. Data and information presented in this study was collected through personal interviews with Lemongrass cultivators with the aid of well structured comprehensive schedule exclusively prepared for the study.

SECONDARY DATA - Secondary data was taken from Centre of Aromatic Plants (CAP) situated in Selaqui, Dehradun and Regional office of State Medicinal Plant Board Dehradun. We also got some data from published research papers in different national and international journals and reports on MAPs of Government agencies, organisation and departments.

MEDICINAL AND AROMATIC PLANTS CULTIVATION IN DEHRADUN - Dehradun district is situated in the foothills of Himalayas and is facing many agriculture problems due to various reasons, namely improper land use patterns, deforestation activities and uncontrolled urban spread out, industrial and mining activities and population growth. Dehradun district become the capital of Uttarakhand state, so more and more non-agricultural development has taken place. The rural mass who tries to earn their livelihood from agricultural is suffering from Government land acquired policy. In this scenario with fast increasing pressure on agricultural land, traditional crop cannot give proper return to farmer. As a result, new technologies and commercial crops like MAPs are adopted to develop agro-economy.

Dehradun is blessed with diverse agro-climatic conditions, which provides optimum growing conditions for MAPs. The increased demand of the medicinal plants in the industry and for trade created direct incentives to the farmers to undertake cultivation of these crops. The pressures of demand exerted by the market, the MAPs have been taken for cultivation by the farmers. These crops are comparatively easy in the cultivation practices, and do not require so much care as needed by the other commercial crops. Different motivating factors like easy availability of inputs, good price, good demand, less problems of pest and disease etc. motivated the farmers to take up the cultivation MAPs in Dehradun. In Dehradun farmers are engaged in cultivation of five main aromatic plants like- Lemongrass, Mint, Rose, Chamomile and Basil. This positive attitude of farmers towards aromatic plant cultivation is because of the high returns from this crop. Intercropping of aromatic plants with food grains can also help diversify the income basket for small and marginal farmers.

SPECIFIC FINDINGS OF THE STUDY - Cultivation of medicinal and aromatic crops is emerging as new commercial enterprise. Our focus in this study was to look at the economic feasibility of medicinal and aromatic crops. In order to understand this, we undertook a field study of Lemongrass (as MAPs) cultivators of Dehradun (Uttarakhand). Through this study I have some important findings-

1. General characteristics of the farmers in the study area revealed that maximum farmers were literates. Only one farmer was illiterate.
2. Average land owned by study area's farmers were 28 Bigha, average land under Lemongrass cultivation were 10.04 Bigha per farmer, in which 20% are irrigated land and 80% are un-irrigated lands. In study area lemongrass cultivators can get one cutting in un-irrigated land per year and two cutting on irrigated land in one year.
3. In the study area mainly three marketing channels are followed by Lemongrass cultivators. These channels are like this-

Channels 1 — Farmer ----- Distillation ----- CAP

Channels 2 — Farmer ----- Distillation----- Middle-man

Channels 3 —Farmer ----- Distillation ----- Local Factory

In study area maximum numbers of farmer sell their Lemongrass oil to CAP. 70% farmer sell their oil to CAP and 25% sell Lemongrass oil to middle man, if they get the more price of Lemongrass than CAP. Remaining 5% sell their oil to factory.

4. The Lemongrass contains oil. The oil extraction is a process which is done with distillation machine. There are 12 distillation units for aromatic plants in Dehradun. In study area average distance of processing unit from the cultivator's field are 10Km. Processing rate of Lemongrass is 50 Rs/- per Quintal and average production of Lemongrass oil per Bigha was 2.35 Kg.

5. Average price received by farmers was 750-800 Rs/- per Kg. for Lemongrass oil in study area. The minimum price (MSP) of lemongrass oil was fixed by Center of Aromatic Plant, Dehradun.

6. Investment in Lemongrass cultivation were found to be economically sound and financially feasible, Lemongrass is a multiyear crop having duration of approximately 4-5 years. Establishment cost of lemongrass cultivation in first year was 5000 to 8,000 Rs /Bigha. Lemongrass gives return after 6 months of weeding. When once Lemongrass was cultivated in the field farmer can get the raw Lemongrass leaves (yield) every 4-5 months, it's depend on the quality of soil and irrigation facilities. In study area maximum farmers cultivated Lemongrass in their wasteland and degraded land which is not in use for cultivation purposes. So they get some return from this wasteland. In other word we can say that Lemongrass (MAPs) generate income from waste land for farmers and give them alternate source of revenue.

7. In study area Lemongrass cultivators average Cost of production for first year was 7000 (Field preparation and Plantation) + 1000 (Labor) + 800 (Processing) = 8800 Rs/- per Bigha and from first cutting the Lemongrass cultivators get average 12 Kg. Lemongrass oil per Bigha, which average market price was 750 Rs/-, so the total profit for first year was $(12 \times 750) - 8800 = 9000 - 8800 = 200 \text{Rs/- per Bigha}$.

In second year Lemongrass cultivators get two cutting in a year. The average Cost of production for second year was 3000 (Labor) + 1600 (Processing) = 4600 Rs/- per Bigha so the average total production for Second year was $(12 \times 750) - 9000 \times 2 = 18000/-$ per Bigha. Total average profit for second year was $18000 - 4600 = 13400 \text{Rs/- per Bigha}$.

In third year Lemongrass cultivators get two cutting in a year. The average Cost of production for third year was 3500 (Labor) + 1600 (Processing) = 5100 Rs/- per Bigha so the total average production for third year was $(12 \times 800) - 9600 \times 2 = 19200/-$ per Bigha. Total average profit for third year was $19200 - 5100 = 14100 \text{Rs/- per Bigha}$.

8. Lemongrass is an important MAPs crop grown in Dehradun. Lemongrass gains popularity among farmers for some reasons, mainly as follow-

Table 3: Motivating Factors of Lemongrass cultivation

SI. No.	Particulars	Rank
1	Not Eaten by Wild Animals	1
2	No Pest and Disease	6
3	Low Cost of Cultivation	5
4	Easy availability of Inputs	4
5	Good Price/ Profit	3
6	Best use of Uncultivated land	2

Source: Field Study, June-July 2013

9. The problems in Lemongrass cultivation in the study area were analyzed in depth and summarized below in the Table 4.

Table 4: Problems facing by Lemongrass cultivators in Study Area

SI. No.	Particulars	Rank
1	Improper processing System	1
2	Lack of Insurance policy	6
3	Problem related to Fire	2
4	Labor Problem	5
5	Subsidy	3
6	Lack of transport facilities	4

Source: Field Study, June-July 2013

CONCLUSION & SUGGESTIONS - A special scheme may be taken up in order to popularize some of the MAPs, which are in high demand from the industry as well as trade. Such scheme will go a long way in incentivizing the farmers to undertake cultivation of Maps.

1. It is necessary to provide information about cultivation practices and uses of major MAPs.
2. Technologically the processing of the MAPs has not progressed sufficiently. In study area there are urgent needs of mobile distillation units which can reach the lemongrass field.
3. All MAPs cultivating farmers should come together and form co-operatives by which they can discuss and solve their problem.
4. Market and trade avenues for the MAPs have properly organised in order to provide proper incentive to the cultivators and basic information about the trade should be provided to them.
5. Investment in MAPs were found to be economically sound and financially feasible, farmers should be encouraged to take up the cultivation of the MAPs crop on large scale.
6. HRDI Subsidy policy should implement properly to motivate the MAPs cultivators.

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