



Cultivation of mentha in nontraditional area for higher productivity of oil

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Abstract

The introductive field study was conducted during two consecutive years of 2017 and 2018 on farmers fields of village Pachpukhara of Kannauj district in the area jurisdiction of KVK, Kannauj, C.S. Azad University of Agriculture and Technology, Kanpur (U.P.), India. The pilot village is located in the vicinity of perfume city of Kannauj. The main objective was to control the mentha oil purchase from outside of city and to increase the income of mentha growing farm families. The highest total productivity of 256.50 lit. oil/ha was noted under improved cultivar of *Cimkranti* over the average productivity of local checks (225.80 lit. oil/ha). The highest net returns of Rs. 172625/ha was found under the *Cimkranti* cultivar, which was higher over the average net return obtained from local checks (Rs. 146245/ha). Highest BCR 1:4.00 calculated from the cultivar *Cimkranti* and lowest was computed from local checks (3.60). The cv. *Cimkranti* displayed the link relative index to the extent of 1.18.

Keywords: BCR, *Cimkranti* variety, Link relative index, Menthol oil, Perfume.

Introduction

The mentha (*Mentha arvensis* L.) is the important medicinal and aromatic plant. It is perennial herb, 30-50 cm high stems quadrangular erect or prostrate, rooting at the nodes. Leaves opposite, ovate, softy tomentose on both sides, margins serrate, inflorescence in axillaries capitates whovle, flowers small, white or lilac. It is grows wild in the mountains and is cultivated everywhere. It is propagated by vegetative method. The whole plant yields an essential oil consisting of L-menthol 65-85 %, methyl acetate.

L-methone, L-a pinene – limonene (Prajapati *et al.*, 2003). The entire plant apart from the roots, is antibacterial and anti-fbnle. It yields an essential oil and menthol which exert through their rapid evaporation. It is effective in fever, headache, cough sore thought, colic, vomiting, diarrhea and prurigo. The essential oil and menthol are the constituents of several balsama. It is also use in other industrial purposes.

The perfume manufacturers of Kannauj are purchased the mentha oil from the outside of location for the preparation of perfumes. This feedback received from the perfume manufactures. In the Kannauj some old varieties were cultivated the farmers tit-bite. These varieties were given poor recovery of oil; therefore, the farmers were suffered from many difficulties. The flexible plan was made and laidout with recent released high yielding mentha cv. *Cimkranti* on 12 locations and compared its oil recovery with already available varieties, is the subject matter of this manuscript.

Materials and Methods

The introductive field trial was laidout during 2017 and 2018 on farmers fields of village Puchpukhara of Kannauj district, which is situated in the area jurisdiction of KVK Kanauj, C.S.Azad University of Agriculture and Technology Kanpur. The pilot village is located in the vicinity of perfume city of Kannauj. The main objective was to control the mentha oil purchase from outside of city and to increase the income of mentha growing farm families. In earlier the households were cultivate the mentha with poor yielder varieties. The experiment soil was sandy loam, having pH 8.0, organic carbon 0.23%, total nitrogen 0.02%, available P₂O₅ 9.80 kg/ha and available K₂O 273 kg/ha, therefore poor nutrients status was analyzed. The pH was determined by Electrometric glass electrode method (Piper, 1950), while organic carbon was determined by Colorimetric method (Datta *et al.*, 1968). Total nitrogen was analyzed by Kjendahl's method (Piper, 1950). The available P₂O₅ and K₂O were determined by Olsen's method (Olsen *et al.*, 1954) and Flama photometric method (Singh, 1971), respectively. The recent high yielder released variety *Cimkranti* was tested with poor yielder cultivars at 12 locations. The recommended dose fertilizers @ 120 kg N +60 kg P₂O₅ + 40 kg K₂O/ha + 20 kg S was given to mentha cultivars. The irrigations were given to crop as and when required. The first cutting of foliage was made after 75 days of planting. Second and last cutting was done after 152 days of planting. The farmers were established own oil

processing plants, that were used for oiling purposes. The oil was sale in the local market without any difficulty. Therefore, the economics was calculated and data were pooled.

Results and Discussion

The data of oil yield was summarized and given in Table-1 and discussed here under appropriate heads.

(A) Varietal effect on oil productivity:

The first cutting of mentha foliage was made after 75 days of planting. The varietal variation of local checks and improved cultivar of *Cimkranti* was found in the oil yield. The recent released cultivar *Cimkranti* gave higher yield by 168.75 lit. oil/ha, which was higher to the average productivity of three local checks (140.60 lit. oil/ha) in the first cutting of foliage. The similar trend was also noted in the second cutting oil yield. The *Cimkranti* produced oil by 87.75 lit. oil/ha which was higher by a margin of 2.25 lit. oil/ha in comparison to average of local checks (85.20 lit. oil/ha). The highest total productivity of 256.50 lit. oil/ha was noted under improved cultivar of *Cimkranti* over the average productivity of local checks (225.80 lit. oil/ha). The variability in oil yield of mentha cultivars was due to genetic variability (Table-1).

(B) Varietal effect on net return:

Perusal of data make it clear that the highest net return of Rs. 172625/ha was found under the *Cimkranti* cultivar, which was higher by Rs. 26380/ha over the average net return obtained from local chicks Rs. 146245/ha). Similarly, highest BCR 1:4.00 calculated from the cultivar *Cimkranti* and lowest was computed from local checks (3.60 average of three varieties). The highest gross return was responsible for the highest BCR under cv. *Cimkranti*.

(C) Link relative index:

This was computed from the net return obtained from the refine treatment and net return from the control treatment (Local checks). The cv. *Cimkranti* displayed the link relative index to the extent of 1.18.

Table-1: Oil yield and net return as influenced by various cultivars of mentha.

(Pooled data of two years)

Sl. No.	Variety	Harvesting days		Oil yield (Lit./ha)			Cost of cultivation (Rs./ha)	Gross return (Rs./ha)	Net return (Rs./ha)	BCR
		I	II	I	II	Total				
1.	Cimkranti	75	152	168.75	87.75	256.50	58225	230850	172625	4.00
2.	Check cultivars									
(a)	Koshi	75	152	136.10	86.50	222.60	56975	200340	143365	3.51
(b)	Gomati (MAH9)	75	152	154.70	87.40	242.10	56975	217890	160915	3.82
(c)	Mentha Piprat	75	152	131.00	81.70	212.70	56975	191430	134455	3.36
	Average of local chicks	75	152	140.60	85.20	225.80	56975	203220	146245	3.60

Market rate of Oil – Rs. 900/litre

Conclusion and Recommendation

The cultivation of cv. *Cimkranti* gave the highest oil yield and net return to the farm families. Therefore, the households may be suggested for adoption of cultivation to *Cimkranti* and harvest the fruits of newly generated technology.

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Access this Article in Online	
	Website: www.ijarbs.com
	Subject: Agricultural Sciences
Quick Response Code	
DOI: 10.22192/ijarbs.2022.09.07.001	

How to cite this article:

Amar Singh, V.K. Kanaujia, I.P. Singh and Sushil Kumar. (2022). Cultivation of mentha in nontraditional area for higher productivity of oil. *Int. J. Adv. Res. Biol. Sci.* 9(7): 1-3.
DOI: <http://dx.doi.org/10.22192/ijarbs.2022.09.07.001>