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Short Communication

PROSPECTS OF ROSE GERANIUM AS A NEW ESSENTIAL OIL YIELDING CROP FOR WESTERN HIMALAYA

K.C. Pant, K.S. Negi, and M.L. Maheshwari*

National Bureau of Plant Genetic Resources (NBPGR),
Regional Station, Bhowali, 263 132, Niglat,
District Nainital (Uttar Pradesh)

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Rose geranium (*Pelargonium graveolens* L. Herit), although a native of South Africa, is extensively grown in Spain, Morocco, Congo, Melagasy, Egypt, France, Spain, East Africa and erstwhile USSR. In India 65 tonns of geranium oil is imported from abroad and only a small quantity is produced within the country. Some of the pelargoniums growing in India are *P. zonale, P. inquinans, P. peltatum, P. lateripes, P. capitatum, P graveolens, P. odoratissimum, P.quercifolium* and *P. radula.* Only *P.graveolens* with its varieties and strains, is cultivated mainly for the distillation of oil of geranium (Annon, 1966).

In India, although it was introduced in the hills of Tamil Nadu (altitude of 1400 to 2000 m.a.s.l.) in early twentieth century but commercially its cultivation began in 1953. In northern India, it was introduced at Regional Centre of CIMAP, Haldwani (Gulati *et al.*, 1982) but not much success could be achieved due to intervening hot summer and water stagnation in rainy season.

National Bureau of Plant Genetic Resources, Regional Station, Bhowali made a successful attempt for the first time by establishing it in hilly areas of Uttar Pradesh.

A demonstration has been conducted in farmer's field for large scale cultivation in the year 1994.

Two chemotypes collected from different locations were grown at this station.

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* NBPGR, Pusa Campus, New Delhi-12.

(1) Sample from Almora were well adapted but its original source is unknown. Plants were fast growing, attaining luxuriant growth in a short time. It has light pink colour flowers with a fading red streak, foliage was light green. The quantity of oil produced was too low (0.05% only). Presently it is being maintained as a genetic stock in the field.

(2) Sample from Hyderabad (orignally Egyptian type, well adapted but slow growing), possess bright pink-purple flower with bright red streak, very light pubescence on stem and foliage appears slightly bluish green. It contains 0.18% quality oil with geraniol (12.22%), Linalool (18%) and Citronellol (26.89%) (Table-1) which is considered reasonably good quantity. Three to four cuttings can be taken for oil extraction. This sample has been recommended for large scale cultivation in U.P. hills.

Table 1. Effect of growth regulator (1000 ppm Indole Butyric Acid) on stem cuttings during different seasons

S.No.	Plant parts	Treated		Un-treated		
		June-July %	Aug. %	Jan.-Mar. %	June-July %	Aug. %
1.	2-3 nodes with terminal end or shoot apex	90	59	88	61	44
2.	2 nodes	-	-	15	-	-
3.	4 nodes	52	-	47	43	-
4.	6 nodes	83	62	53	77	12
5.	Single leaf- old	Nil	-	-	Nil	-
6.	Single leaf- new	Nil	-	-	Nil	-

Abb. - Not recorded, % - established

Climate: Geranium can be grown from sub-tropical with humid conditions to temperate climate. In plains, it can be grown only as an annual crop. It can not withstand water stagnating conditions and hot winds. At NBPGR, Regional Station- Bhowali, where the average rainfall during crop growing year was 1000 mm/ annum and winter temperature dropped to a minimum of -2°C, it not only survived but gave sufficient number of cuttings in the following season, thus exhibiting perennial behaviour under hilly conditions.

Propagation: Plants are propagated by stem cuttings; terminal portion upto 8-12 cm length and cuttings with 6 nodes gave the best results and also those treated with 1000 ppm IBA (Table 2). Rainy season or humid conditions are congenial for its regeneration/establishment.

*Nali Measurement prevalent in U.P Hills; 1 Nali = 2160 sq. feet

Table 2. Composition of geranium oil*: sample from Hyderabad

Main components	%
Rose oxide,cis.	1.64
Linalool oxide,cis.	0.71
Menthone	0.47
Iso menthone	7.80
C-10 aldehyde	1.06
Linalool	18.00
Citronellyl formate	6.90
-Terpenol	2.33
Geranyl formate	1.79
Citronellol	26.89
Nerol	0.81
geraniol	12.22
epi. - endesmol	3.37
Geranyl tiglate	1.42
Phenyl etyl tiglate	0.55
Phenyl ethyl tiglate	0.42

*Oil distilled at NBPGR, New Delhi

Land preparation: A slightly slopy land is preferred. Small pits are dug and to each pit 30 g rock phosphate and 200 g compost manure and a pinch of DDT (@10 kg/ha) is recommended. Leaf harvest can be taken up 3-4 times from second year. The harvesting of tender leaves is done before the flower commences and lemon like note changes to rosy odour. Adequate foliage should be left after each harvest.

Plant stand: In hills in terraced fields, 320 plants can be grown in a *nali** (16000 plants/ha). At present rooted plants are being supplied by the farmer at village Sirodi, Bhowali, Distt-Nainital, U.P.

Prospects: Considering high price of the oil (Rs. 4000 kg or more), low input requirements, perennial habit, rose geranium has high potential as an industrial crop in the hills. It will improve the economic condition of those farmers depended on low yielding conventional crops like wheat and paddy on upland areas, beset with many problems.

If distillation units are provided for oil extraction at some points between villages it will further improve the economy of the local people.

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REFERENCES

Annon., 1966 Wealth of India, Raw materials, Vol. 7, CSIR, New Delhi, p. 287.

Gulati, B.C., Thapa, R.K., Agarwal, S.G., Dhar, K.L., Atal, C.K. and Duhan, S.P.S. 1982. Cultivation of *Pelargonium graveolens* as annual crop. In: Cultivation and Utilization of Aromatic Plants (Eds. Atal, C.K. and Kapur, B.M.), CSIR, New Delhi.