DEVELOPMENT OF A NEW GERANIOL RICH SELECTION FROM THE SEED PROGENIES OF LEMONGRASS

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GERANIOL is highly valued in perfumery industry because of its extensive use in the production of perfumes and many synthetic aromatic chemicals. One of the best known natural sources of geraniol is the essential oil obtained from Palmarosa (*Cymbopogon martinii* Stapf Var motia) which contains 75–90% geraniol. Recently jamrosa, an aromatic grass containing about 60–65% geraniol has been released from Regional Research Laboratory, Jammu. The major constituent of the oil produced by the lemongrass varieties is citral. In our breeding programme, a plant containing about 80% geraniol was identified from the seed progenies of OD 19 variety of lemongrass (*Cymbopogon flexuosus* (Steud) Wats). This investigation presents the possibility of developing geraniol-rich cultivars by selection from seed progenies of lemongrass.

Five thousand plants raised from the open-pollinated seeds of lemongrass were grown and evaluated during April 1983. The oil content of the plants was determined by hydro distillation using a Clevenger's apparatus. The oil samples were screened on Perkin Elmer GC model 3920 fitted with TCD and 2 m × $\frac{1}{4}$″ glass column packed with Reoplex-400. The analysis was carried out at isothermal temperature of 120°C. Finally full analysis of the oil sample from selection no. 269 was performed on the same column with 30 ml/min hydrogen flow rate and programming the temperature from 100° to 200°C with a rise of 2°C/min. The components were identified by retention time and coinjection of components.

The seed progenies exhibited considerable variability for several plant characteristics including herb yield and oil content[1]. The oil collected from individual plants showed wide variability for major constituents *viz* citral, geraniol and geranyl acetate. The oil from OD 19 usually contained about 85–90% citral, 3–5% geraniol and 1–3% geranyl acetate. Among the progenies of OD 19, citral varied from 7.3 to 90.1%, geraniol from 0.16 to 76.4% and geranyl acetate from 0.66 to 9.7%. The progeny (no. 269) containing geraniol-rich oil was grown along with the plants of palmarosa var motia and Jamrosa and the oils from these plants were evaluated during October 1983 (table 1). The clonal progenies of the selection no. 269 when further evaluated during February 1984 gave 0.6% oil with the oil containing 82.0% geraniol and 1.5% geranyl acetate and 3% citral. The results indicated that this selection contained high content of geraniol rich oil comparable to palmarosa in oil percentage and geraniol content of the oil.

Table 1 *Comparison of selection no. 269 with Jamrosa and Palmarosa*

Entries	Oil content (v/v)	Geraniol (%)	Geranyl Acetate (%)	Citral (%)
Selection 269	0.50	74.5	10.4	7.2
Jamrosa	0.40	45 6	22.3	10 1
Palmarosa	0.55	65.7	16.7	9.3

Palmarosa is cultivated mainly due to the high cost of its geraniol rich oil. Although lemongrass oil is considerably cheaper than palmarosa oil, cultivation of lemongrass is popular in many areas due to its ability to give satisfactory yields with minimum cost of cultivation even under adverse conditions (such as poor soil fertility, drought, alkaline soils, undulating lands etc). The selection no. 269, described in this report combined the morphological and agronomic attributes of lemongrass together with the high geraniol content of the palmarosa oil. This selection undoubtedly appears to be superior to Jamrosa in respect of the geraniol yield and offers an effective substitute to growers of palmarosa and lemongrass under different agroclimatic conditions.

The authors are grateful to Dr Akhtar Husain, Director, for valuable suggestions.

2 May 1984

1. Nair, R. V., Singh, Kamla., Singh Virendra and Ananthan, K. S., *Indian perfumer* (in press).