OIL CONTENT IN RELATION TO POLYPLOIDY IN CYMBOPOGON

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ABSTRACT

Diploid and polyploid races of commercially important species of the genus Cymbopogon have been investigated for their oil contents. The polyploid races were found to be richer in oil content as compared to their diploid counterparts within species range.

INTRODUCTION

There are over 100 species belonging to the genus Cymbopogon which are aromatic grasses belonging to the tribe Andropogoneae distributed in the tropics and subtropics of the Old World. The largest concentration of species is found in Tropical Africa and South-East Asia.

Twenty-one species are found in India (Bor, 1960) and the chromosome number of 16 species including 33 races collected from various parts of the country have been reported by Gupta (1965 and unpublished).

The species of Cymbopogon cultivated in various parts of the world for their essential oils are the following:

1. C. nardus (Linn.) Rendle which yields citronella oil.
2. C. flexuosus (Nees ex Stued) Wats. is the source of East Indian lemon grass oil.
3. C. citratus Stapf. is the source of West Indian lemon grass oil.
4. C. martinii (Roxb.) Wats from which palmarosa and ginger grass oil are obtained.

Diploid, tetraploid and hexaploid races have been found in the nardus series. Diploid and tetraploids in C. flexuosus and C. martinii and tetraploids and hexaploids in C. citratus.

In the nardus series both diploid and hexaploid races are found growing wild in the Nilgiris and have been designated as C. confertiflorus (Stued)
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Stapf. The hexaploid race is found in the higher altitudes of Pykara and yield 2.25 per cent. oil while the diploids are found in the valleys and had \( \cdot 5--95 \) per cent. of oil only. The tetraploid which is evidently a hybrid between the diploid and hexaploid occurs only as a cultigen. This is the famous Java "Citronella grass". It has however 1 per cent. oil. In *C. flexuosus* the diploids were found to have oil ranging from \( \cdot 5 \) to 1 per cent. while the tetraploids have over 1.5 per cent. *C. citratus* which is an allied species of *C. flexuosus*, *i.e.*, tetraploid form yields 1.2 per cent. lemon grass oil. The most interesting correlation between polyploidy and oil content is found in *C. martini* in which the diploid form *C. martini* var. *motia* yields 1.5 per cent. palmarosa oil and *C. martini* var. *sotia* the tetraploid yields 2.5 per cent. of ginger grass oil, *i.e.*, there is not only an increase in the oil content but also a change in the chemical composition of the oil between the diploid and tetraploid forms.

**REFERENCES**
