



**Seasonal yield and chemical composition of the essential oil from *Lippia origanoides* Kunth and its relationship with meteorological elements in the Cerrado, Federal District, Brazil.**

Araci M. Alonso<sup>1</sup>, Alexandra D. de Oliveira<sup>1</sup>, Juaci V. Malaquias<sup>1</sup>, Ismael da S. Gomes<sup>2</sup>,  
Dijalma B. da Silva<sup>2</sup>, Humberto R. Bizzo<sup>3</sup>, Roberto F. Vieira<sup>2</sup>

<sup>1</sup> Embrapa Cerrados - Planaltina, DF, Brazil.

<sup>2</sup> Embrapa Genetic Resources and Biotechnology - Brasília, DF, Brazil.

<sup>3</sup> Embrapa Food Technology - Rio de Janeiro, Brazil.  
dijalma.silva@embrapa.br

Keywords: *Lippia origanoides*, essential oil, thymol, seasonality, Cerrado.

*Lippia origanoides* (alecrim pimenta) is a wild shrub of the family Verbenaceae, native to Brazil. Its main product is the essential oil rich in thymol, produced in specialized glands of leaves and flowers and has potential application in the pharmaceutical and cosmetic industries. The main objective of this study was to evaluate the variation in the yield and essential oil composition of *Lippia origanoides* harvested three times in one year and its relation to the air temperature, relative humidity and solar radiation in the Cerrado, DF. The experiment was conducted at Embrapa Cerrados, Planaltina, DF, in irrigated pots (~70L) placed in the field. Plant material was harvested in the morning and during flowering in the three seasons (autumn-May / 2013; winter-August / 2013; summer-February / 2014). After drying in an oven at 38°C for 48 hours, the essential oil (EO) was extracted by hydrodistillation in a Clevenger modified apparatus, dried with Na<sub>2</sub>SO<sub>4</sub>, and stored away from moisture and light. The constituents of the essential oil were identified by gas chromatography (GC-FID and GC-MS). The values of the areas and their relative percentages were obtained in triplicate. For thymol quantitation, an analytical curve was built using an authentic standard (external standard method). The air temperature values (T), relative humidity (RH) and solar radiation (RS) were recorded for the harvesting date and time, at 10 am, in three seasons. The design was completely randomized, a total of 3 treatments x 5 replications. The EO yield ranged from 2.45% to 3.21%, and 43 constituents were detected, being thymol the highest (71-75%). The only significant correlation between the yield of OE and meteorological elements was with solar radiation (Pearson correlation at 5% = - 0.929). Thymol did not correlate significantly with T, RH and RS. The nonparametric Kruskal-Wallis to the level of 5% probability was significant for EO income in the comparison between August / 2013 and February / 2014, with the highest average for August (3.21%). The results showed that of the 43 constituents, thymol is the major primary (> 71%) and does not suffer apparent variation of T, RH and RS; the essential oil yield is higher under lower solar radiation conditions especially in the winter season in the Cerrado, Federal District, Brazil.

Acknowledgements: Embrapa.