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Influence of genetic materials and seeding density on chamomile essential oil production

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The only genetic material used for chamomile (Chamomilla recutita (L.) Rauschert) production in the South Brazil is the cultivar Mandirituba. Besides the limitations regarding the floral heads and essential oil yield of this cultivar, phytosanitary problems have also been observed. The objective of this work was to compare genetic materials from Holland, Denmark and Brazil and to evaluate the effect of seeding density on floral heads development and essential oil production, both yield and quality. The experiments were carried out at field conditions in Piraquara, Paraná State, Brazil. The essential oil was obtained by hydrodistillation in a Clevenger apparatus and the oil composition was analyzed by gas chromatography (GC/FID) and mass spectrometry (GC/MS). Genetic materials from Holland and Brazil presented statistically higher dry mass accumulation than materials from Denmark. However, the material from Brazil showed a higher essential oil yield (4.7 $\mu L \cdot g^{-1}$, dried mass) and productivity (2.40 $L \cdot ha^{-1}$). The genetic material from Denmark and Brazil showed similar essential oil composition. The best seeding density was 1.0 $kg \cdot ha^{-1}$ for cultivar Brazil and the use of 3.0 $kg \cdot ha^{-1}$ reduced plant development due to the high plant competition.