

**Effect of *Baccharis articulata* essential oil on seed germination and seedling development of ryegrass**Rafael D.B. Ducatti<sup>1</sup>, Maicon Borsatti<sup>2</sup>, Siumar P. Tironi<sup>2</sup><sup>1</sup>Universidade Tecnológica Federal do Paraná – Pato Branco/PR, Brasil<sup>2</sup>Universidade Federal da Fronteira Sul – Bairro Fronteira Sul S/N, Chapecó/SC, Brasil  
rducatti@alunos.utfpr.edu.brKeywords: *Lolium multiflorum*, doses, clevenger.

Ryegrass (*Lolium multiflorum*) is a prevalent weed species in southern Brazil, known for its resistance to herbicides, making it a challenge to be controlled. To address this issue, the objective of this study was to evaluate the potential of *Baccharis articulata* essential oil in controlling ryegrass. *B. articulata* stems were collected and used to extract the essential oil using a Clevenger model hydrodistiller (1). The essential oil treatments consisted of 0, 5, 10, 25, and 50 g L<sup>-1</sup>, following a completely randomized experimental design with four replications. Solutions containing essential oil were prepared using 3% methanol and 2% emulsifier (Tween 80) (2). Two tests were performed, one with the application of essential oils directly on ryegrass seeds and another on seedlings. In the first test, 30 ryegrass seeds were sown in plastic boxes of the "germbox" type, on two sheets of germination paper. The paper sheets were moistened with each treatment solution in a proportion of 2.5 times their weight. The boxes were placed in a germination chamber with a temperature of 20 °C and a photoperiod of 12 hours. After 14 days, the germination percentage, shoot length (cm), and root length (cm) were measured. The measurements of shoot and root lengths were taken on 10 seedlings randomly selected from each replication. In the second test, ryegrass was sown in 0.3 dm<sup>3</sup> plastic pots filled with commercial substrate, with 10 seedlings per pot. When the seedlings reached two to three leaves, the essential oil doses were applied by spraying with a spray bottle, administering 0.5 mL of each treatment medium per pot, ensuring even distribution of droplets on all leaves. Visual phytotoxicity (%) was evaluated at 7 and 14 days after treatment application. The data obtained were subjected to analysis of variance, and the means were compared using Tukey ( $p \leq 0.05$ ). The results showed that the essential oil doses had negative effects on the germination percentage, with a drastic inhibition observed from doses of 5 g L<sup>-1</sup> onwards. In the control group without essential oil application, the germination rate was 64.51%, while for the other doses, the values were 0%. These results indicate that essential oils have a significant effect on inhibiting the germination of ryegrass seeds. The length of the shoot and root system was not quantified at doses greater than 5 g L<sup>-1</sup> of the essential oil, as the seeds did not germinate. In the control group, without the application of essential oil, the shoot and root length values were 5.53 cm and 1.51 cm, respectively. The phytotoxicity of the essential oil applied to seedlings was low after 7 days from the treatment. However, at 14 days after treatment, phytotoxicity values reached 39% with the application of 5 g L<sup>-1</sup> of the essential oil. *B. articulata* essential oil completely inhibits the germination and growth of ryegrass seedlings when applied to the seeds. When applied to the aerial parts of the seedlings, *B. articulata* essential oil can cause significant phytotoxicity, but it does not effectively control the plants.

1. Costa et al., Horticultura Brasileira, 2005, 23, 956-959.

2. Nascimento et al., Acta Amazonica, 2008, 39, 503-508.