Title	Toxicity of beta cyfluthrin applied alone or in combination with diatomaceous earth against adults of Sitophilus oryzae (L.) (Coleoptera: Curculionidae) and Tribolium confusum DuVal (Coleoptera: Tenebrionidae) on stored wheat
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Abstract

Laboratory experiments were carried out to evaluate the insecticidal effect of beta cyfluthrin applied to wheat, with or without the addition of the diatomaceous earth SilicoSec, against adults of *Sitophilus oryzae* (L.) (Coleoptera: Curculionidae) and *Tribolium confusum* DuVal (Coleoptera: Tenebrionidae). The insecticide was tested at three dose rates, 0.125, 0.25 and 0.75 ppm, and the SilicoSec dose rate was 250 ppm. Mortality of the adults was assessed after 24, 48 h, 7 and 14 d of exposure to the treated substrate at 26 °C and 65% RH. After the 14 d count, all adults were removed and the treated wheat remained at the same conditions for an additional 60 d more. After this interval, the progeny production was recorded. For both species an increase in the beta cyfluthrin concentration increased adult mortality. For *S. oryzae*, the presence of SilicoSec increased the insecticidal effect of beta cyfluthrin at the dose rates 0.125 and 0.25 ppm. In contrast, the presence of SilicoSec did not affect the efficacy of beta cyfluthrin at 0.75 ppm. After 14 d of exposure, adult mortality ranged between 64% and 100%. For *T. confusum*, the addition of SilicoSec did not increase the insecticidal efficacy of beta cyfluthrin, for any of the dose rates tested. Beta cyfluthrin was highly effective against this species, since adult mortality after 14 d of exposure was 100% in dose rates $\geq$ 0.25 ppm. In contrast, mortality caused by SilicoSec alone did not exceed 33% after 14 d of exposure. The simultaneous presence of beta cyfluthrin and SilicoSec significantly decreased *S. oryzae* progeny production, in comparison with beta cyfluthrin alone. On the other hand, *T. confusum* progeny were only recorded on wheat treated with SilicoSec alone. The current results indicate that low rates of beta cyfluthrin can be combined with success with SilicoSec, at least in the case of *S. oryzae*.