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A comparison between different oxalic acid treatments in overwintering honeybee colonies affected by Varroa destructor

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Title:	A comparison between different oxalic acid treatments in overwintering honey bee colonies affected by <i>Varroa destructor</i> Anderson & Trueman
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Abstract: (Your abstract <u>must use</u> Normal style and <u>must fit</u> in this space)	<p>Four oxalic acid (OA) administrations were compared under winter continental (Modena, Emilia-Romagna) and Mediterranean (Siena, Tuscany) conditions in Italy. Each of two apiaries of 50 broodless colonies were randomly split into 5 groups. Sucrose (S) was added to solutions intended for trickling and the Varrox device was used to sublimate OA within the hives. Groups A, B and C received respectively 4.2%OA/60%S, 3.2%OA/60%S and 4.4OA%/30%S solutions by trickling (5ml/comb) and group D was treated by sublimation (1,4g of OA). Group E was left untreated and served as a control.</p> <p>The tolerability was assessed by comparing initial and final number of adults and brood cells. At the time of administration, the colonies sized 8840 and 10530 adults in Modena and Siena, respectively, and had an average decrease of 20-35% and 8-27% by the end of the winter. At this age, the brood averaged 1454 and 10391 cells, respectively. The above population parameters did not significantly differ between groups and no evidence for a lacking tolerability was attained.</p> <p>In Siena, a low mite load did not allow the evaluation of efficacy. This could be made in Modena, where the natural mite mortality reached 13.6% and the efficacy was 87.7, 87.1, 70.3 and 91.0% in groups A-D respectively. This was somewhat lower than previous recordings and may be due to the low environmental and internal RH. The significantly lower mortality in group C stresses the need of a high sugar concentration in solutions intended for trickling. No significant differences occurred between the other groups, whose treatments seemed alternative on the practical point of view. The sublimation was time expensive and required heavier protections than the trickling.</p> <p>The statistical analysis pointed out that, under the examined conditions, the natural mite mortality does not allow a reliable estimate the overall colony infestation (Squared R=0,501). Similarly, the number of populated combs depends on the actual number of bees to a limited extent (Squared R=0.507), although this does not necessarily imply an influence on the treatment performances.</p>