

M 3371

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**Bait Treatment of Fire Ants and Acceptance of Newly-Mated Queens: A Comparison of Hydramethylnon, Fenoxycarb, and Avermectin**

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We previously demonstrated that in colonies where the queen is lost, the normally territorial workers become non-aggressive toward non-nestmate conspecific workers. Even more surprising was that these workers now readily adopted newly mated queens (NMQs). Hydramethylnon is known to often kill the queen but leave some workers unaffected. We demonstrated that field sites treated with hydramethylnon developed nucleus polygyne populations, probably through the adoption of multiple NMQs by queenless worker groups. In this study we compared under laboratory conditions the effect of hydramethylnon, that kills the queen with the effect of fenoxycarb and abamectin, both of which effectively sterilize the queen but do not kill her. Do workers that have non-functional queens adopt NMQs, as they would if their queen was dead or do they behave normally? Our results were unambiguous. In fenoxycarb treated colonies the colony queen's egg production decreased to only a few eggs per day, but she was still laying, and still releasing queen pheromones. Workers from these colonies executed all introduced newly mated queens. In avermectin treated colonies the queen's ovaries were destroyed and no egg production was observed. Under these conditions workers from these colonies still behaved as if they were queenright and executed all introduced NMQs. Only when the colony queen is actually killed, as in case of hydramethylnon treatment, do the workers adopt NMQs.