COCKROACH INSECTICIDE TREATMENTS AND HUMAN LIFESTYLES IN COUNCIL FLATS IN FRANCE

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Abstract—The current situation concerning cockroach (*Blattella germanica* (L.)) presence and insecticide control was investigated in high-rise blocks of low-income flats in the French city of Rennes. The aim of this study was to analyse the results of professional cockroach insecticide treatments and to try to understand why control success was so low. Treatments were proposed every two months for a year. Cockroach abundance and six general environmental characteristics were recorded after each treatment, for each flat treated. The environmental characteristics recorded for each flat were : nationality of residents, duration of occupation, human density, application of domestic pesticides, reactions of residents to the presence of cockroaches and degree of cleanness. A multivariate analysis stressed the influence of the combination of level of cleanness and human density on cockroach abundance. Our data revealed for the first time that although dirtiness influenced cockroach abundance it did not influence cockroach presence. Residents' nationality, duration of occupation, reaction to the presence of cockroaches, use of domestic insecticides were not correlated with cockroach presence or abundance. Our data show that the part played by the residents in a given structure has been greatly underestimated so far when the results of treatments are analysed.

INTRODUCTION

According to agricultural standards, the objective of insecticide use is to reduce pest infestations to below the level at which they cause damage, as effectively and as economically as possible (Dent, 1991). However, in urban environments, the ideal level is often zero individuals. Urban pests are organisms damaging human interests (Bennett and Owens, 1986). Subjectively, one of the main urban pests is the cockroach, although cockroaches rarely cause important economical damage. However, cockroaches can be health hazards (Roth and Willis, 1957; Burgess, 1984; Cochran, 1982; Bennett and Owens, 1986; Le Guyader *et al.*, 1989; Cloarec *et al.*, 1992; Rivault *et al.*, 1993).

Cockroach pest species are successful in exploiting the resources human structures and life styles offer. Humans shape the urban ecosystem which provides all the necessary resources (food, water, harborage, temperature and humidity) for cockroaches, in an environment where they do not have any predators other than human beings (Bennett and Owens, 1986; Rivault *et al.*, 1994).

This makes control, or management of these organisms, described as pests, an important challenge. However, cockroach control, relying solely on pesticide use, is often a failure for many reasons. One of them is insecticide resistance. This major biological problem is very well documented for feral populations in the USA. However, there are no data for French cockroach populations. In France, pesticide use in council housing is generally limited to one professional treatment per year, sometimes even less. This does not mean that resistance does not exist in these populations.

The aim of our study was to analyse the results of controlled series of professional insecticide treatments on feral cockroach populations in council flats in multi-family buildings in the town of Rennnes, France, and to try to understand why treatments failed.

MATERIAL AND METHODS

Study Buildings

Three blocks of council flats (named A, B and C) with comparable high cockroach infestation levels were chosen after preliminary investigations. These blocks were built in the city of Rennes (France) in the 1970's. These 15-storey, 96-flat buildings all had 6 flats on each floor.

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