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PROBLEM
RODENTS AS A PUBLIC HEALTH PROGRAMME
AND THEIR CONTROL IN KUWAIT WITH SPECIAL
REFERENCE TO THE ORGANIZATIONAL FRAMEWORK
FOR RODENT CONTROL IN THE COUNTRY

BY

Dr T.M. Zaghoul*, et al

Head Insect and Rodent Control Division,
Ministry of Public Health, Kuwait

URBAN RAT CONTROL MANAGEMENT

"PROJECT OF KUWAIT STATE"

T.M. ZAGHLOUL, K.S.AL-SANEI & M.M. BALBA

MINISTRY OF PUBLIC HEALTH, KUWAIT

INTRODUCTION

Rats and mice in the human environment cause enormous economic loss. In addition, they have been responsible for more human illness and deaths than any other group of mammals.

Of the diseases that could be directly transmitted to man, rat-bite fever is counted. Other diseases such as bacterial food poisoning, Weil's disease, leptospirosis, and tapeworm infections could be spread when human food is contaminated by rodent feces.

Indirectly transmission through rodent fleas and mites cause many other diseases to man. Plague "Black Death" is considered the major disease that once killed millions of people in Europe, Asia, and Africa. Murine typhus fever, rickettsialpox are also listed under this group.

RAT CONTROL IN KUWAIT

Kuwait State is located at the eastern north of the other Arab countries that form the Arab Peninsula. The problem of rats and mice in Kuwait, as in the other neighbouring countries, is mainly considered as a health problem.

The changes which followed the oil-producing era have attracted so many people from different parts of the world to come and settle. Those newcomers, with their different cultural and social backgrounds mainly concentrate in big towns and cities. This has resulted in a higher yield of free garbage and disposal material which in turn enormously increased the rat infestation. Moreover, an influx of rats and mice has been always expected, together with the immense amounts of imported goods.

As a result of such different factors, urban rat population has continuously built up despite the sporadic or temporary control measures.

Rodent-borne Diseases

Rodent control in Kuwait has been one of the activities and responsibilities of the Ministry of Health. A large number of rats, namely *Rattus norvegicus*, has been captured in Kuwait City and its suburbs (e.g. 874 in 1978), and a large proportion (30%) were found infested with the rat flea, *Xenopsylla astia*. No plague cases have been reported.

During the same year the epidemiological findings have revealed 258 cases of endemic typhus in the residents of Kuwait. This number of cases could epidemiologically be considered as only one fourth of the total cases (Burgdorfer, 1976).

Such epidemiological findings coincided with the high densities of fleas and mites that have been found on the Norway rat. The health authorities, faced with such epidemiological threat, has motivated the government to start and support a whole-sale programme for rat control.

Control Programme

A government organizational structure, with all its financial independence and authorities, has been constructed to maintain a permanent control programme. Other governmental branches that are concerned with the problem, together with the Ministry of Public Health, have to coordinate activities and enthusiastic support to achieve success.

In rat control programmes there are so many aspects that need support and action of the society. Environmental deficiencies in terms of human behaviour for storage and handling of garbage and refuse, has been always one of the major points to be considered to discourage rodent infestation.

Publicity, using all its different channels, has the priority to influence the people to understand the problem and, to gain their enthusiastic support and action to reduce it. They should have to understand in advance the hazards that may occur as a result of the misuse of the poisoned baits used for rat control.

Following the delineation of the abundant rat species and their ectoparasites, toxicological studies have been run periodically for choosing the proper biocides and to detect any sign of resistance that may occur.

Plan of Action

All needs and supplies have been estimated in advance, training of personnel took place, and a time table for each operation has been outlined. Administrative skill has to cooperate in such a concordant way with all other technical activities to attain its goal.

An inhabited area representing the country was selected for running a pilot project to assure the smoothness of the different operations.

Sequence of Field Operations

- 1- Geographical reconnaissance.
- 2- Surveying 10% of randomly-selected buildings.
- 3- Attack phase, dusting with insecticides followed by poison baiting on a total coverage scale.
- 4- Evaluation of operations at different intervals.
- 5- Different sites of special importance (e.g. port areas, hospitals, food markets, general parks....etc.) have to receive intensive programme.

After two cycles of total coverage with poison baiting, and as consolidated by a sharp decrease in the site and rate of rat infestation, the programme has to enter into its MAINTENANCE PHASE. The strategy has to be modified in such a way that survey and evaluation should receive much more attention, permanent baiting stations have to be distributed over selected locations. Rat infestation should be kept always as its lower level which have been attained. Moreover, continuously watch for any new species that may enter the country should be highly considered.

Different Signs of Success

Table (1 - 2) show different results that have been achieved, and evidence the success of rat control programme.

With all the success been achieved, together with the wide experience that different categories of staff have gained, it shall be very useful to start constructing a "Pest Control Training Centre" in Kuwait. This centre shall attribute not only in training personnel from other neighbouring countries of the Arab Peninsula, but also in maintaining a "Rat Free Area".

TABLE - 1-

EFFECT OF POISON BAITING
ON RATTUS NORVEGICUS INFESTATION

TREATED SITES	INFESTATION RATE		REDUCTION RATE
	BEFORE CONTROL	AFTER TWO CONTROL CYCLES	
PREMISES	50%	0.2%	99.6%
INTERNAL SEWAGE MANHOLES	25%	1.4%	94.4%
EXTERNAL SEWAGE MANHOLES	17%	0.4%	97.5%

FIGURE (1)

GOVERNMENTAL AGENCIES REPRESENTED

IN THE SUPREME COMMITTEE

- MINISTRY OF PUBLIC HEALTH
- MINISTRY OF PUBLIC WORKS
- MINISTRY OF INFORMATION
- MINISTRY OF EDUCATION
- MUNICIPALITY OF KUWAIT
- KUWAIT PORT CORPORATION

TABLE - 2

RELATION BETWEEN MURINE TYPHUS CASES
AND XENOPSYLLA ASTIA INFESTATION

YEAR	TYPHUS CASES	FLEA INDEX
1978	258	7.3
1979	163	2.1
1980	49	0.7
1981	2	0.2

CONTROL OPERATIONS STARTED 1979

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