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THE ORGANIZATION OF SNAIL CONTROL WITHIN THE HEALTH SERVICES AT CENTRAL AND PROVINCIAL LEVEL

by

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I INTRODUCTION

Schistosomiasis is considered to be one of the most important public health problems in Egypt. Long experience in Egypt and elsewhere has proved that neither mass chemotherapy alone, nor mollusciciding alone, could achieve permanent results in the control of schistosomiasis and that both measures should be combined.

II SNAIL CONTROL

Early in 1941, the Egyptian Ministry of Health established a special snail control section, the first of its kind in the world, to combat the vectors of schistosomiasis.

The entire area of each Governorate is divided into so-called "Control Units", the smallest unit in snail control. Each unit includes 3 men and involves about 5000 feddans, or an average of 200 - 300 kms of irrigation and drainage channels. These 3 men are required to inspect their whole area once every month. Every 4 control units form a "Collection", directed by a medium-grade technician. Each 4 "collections" form a "District Inspectorate", directed by an agricultural engineer. The entire operation is supervised by a "General Inspectorate", located in the capital of the Governorate. This inspectorate is directed by a senior inspector and a deputy, both of whom are graduate agricultural engineers. The senior inspector has also a technical and administrative staff

III METHODS USED FOR SNAIL CONTROL

1. "Focal Control". In this method, application of molluscicides is restricted to a "station", comprising a 500m stretch of the stream where schistosome-infected snails have been discovered. This method is being abandoned as its effect is limited.

2. "Radius Control". In this method, all snail-infested water channels within a 500m radius from the periphery of the village are treated because it is within that radius that the most frequent association between man and snail occurs. This method is now considered to represent the minimum in terms of snail control. Copper sulphate is the only molluscicide recommended for use in the "Focal" and "Radius" control methods.

3. "Generalized Snail Control". In this method all irrigation channels and all drainage systems are treated with molluscicide, whether infested or not infested with vector snails. Recent plans for combating vector snails are based on this method

The generalized snail control method was first used in Egypt in 1953, in the Warraq El-Arab area, about 10 km north-west of Cairo, where a snail control project used sodium pentachlorophenate as a molluscicide This project was implemented joint with the United States Government and covered an area of about 25 km^2 , comprising a population of 60 000 inhabitants living in seven villages. The area became free of snails shortly after the first blanket application. As was expected, reinfestation from the untreated upstream canals took place. It was found necessary to repeat the general blanketing of the whole area three times a year to keep it virtually free of snails; in addition, local molluscicide applications were made to the few infested water channels found during the monthly surveys.

This method was employed for the second time in 1969 in the entire Fayoum Governorate, in a joint project with the Government of the Federal Republic of Germany. The area comprises 1600 km^2 with a population of more than one million. It contains a cultivable area of 400 000 feddans, served by irrigation and drainage streams about 40 000 km in length and irrigated by one feeder canal, Bahr Youssef, with a water volume of 8 million cubic meters. The project was based on generalized snail control using Bayluscide as a molluscicide. The success of the snail control achieved has been maintained by surveillance, local applications of molluscicide to occasionally infested branches in addition to application in the spring, summer and autumn to Bahr Youssef, the main feeder canal Stagnant drains and tail ends of canals are sprayed with Bayluscide. This plan was carried out over three years, then, as the density of snails had been reduced, the applications of Bayluscide to Bahr Youssef were limited to spring and autumn, while local applications were made to occasionally infested streams. This project is still being carried out under the Egyptian Government's budget

Following this remarkable success in Fayoum, the "Middle Egypt Schistosomiasis Control Project" was initiated. A 4-year agreement was signed with the World Bank to provide a loan to extend control activities on similar lines to the adjacent Governorates of Beni Suef, Minya and Assiut, covering an area of about 900 000 feddans

and a population of about three millions. The snail control work started in 1976. The strategy involved the application of Bayluscide throughout the area in spring, summer and autumn, and in addition, local applications of molluscicide to occasionally infested water courses. During the consolidation phase, which started in 1979, two area-wide applications were made, in spring and autumn, while the infested water courses were surveyed and molluscicided in summer.

Having achieved good snail control during the "Middle Egypt Governorates Project", a further agreement was signed with the World Bank with a view to extending control activities to cover the entire irrigated area of 1 200 000 feddans between Assiut and Aswan, with a population of about 5 million people. Snail control in this Upper Egypt Project started in 1981 and followed the same strategy as that employed in the Middle Egypt Project.

Similar projects may be carried out in future in some parts of the Nile Delta.

IV ADVANTAGES AND DISADVANTAGES OF MOLLUSCICIDES

The use of molluscicides still offers the best prospects for rapid control of schistosomiasis transmission. A further important advantage is that the use of molluscicides also controls the vectors of other trematode infections, particularly fascioliasis, of domestic animals, these are of the utmost economic importance.

Because of the problem of reinfestation, the application of molluscicides, except in completely isolated places, has to be continually repeated and is, therefore, costly All current molluscicides are toxic to fish. Certain precautions may be necessary in handling the undiluted molluscicides, especially those containing sodium pentachlorophenate.

V BIOLOGICAL CONTROL

There is a demand for an alternative to toxic chemicals and greater attention is therefore being paid by research workers to biological control. Previous efforts concentrated on predators and parasites, but now more attention is being paid to competition, displacement and other biological measures.

Successful biological control methods would undoubtedly be of economic advanta but further research into the feasibility and practicability of the application of organisms of potential value is required before they can be considered for use in t field. They require careful evaluation under field conditions.

VI ENGINEERING CONTROL

A good knowledge of the ecology of snails is fundamental if engineering contro is to be effective, so that the environment can be physically changed in such a way to render the habitats less suited for the snails.

The following methods are of great value and should be considered ·

1. Water courses should have proper contours and a slope sufficient to prevent sl current.
2. There should be no dead ends to irrigation canals or drains.
3. Regular weed and silt clearance is necessary.
4. Covered drainage has already been introduced in Egypt in 900 000 feddans.
5 Mechanical barriers have been suggested for the purpose of preventing the infl of snails and snail egg clutches into newly established irrigation systems or systems which have been freed from snails through chemicals. Partial barrier are the only type which could be used. Complete barriers with a small enough screen mesh would create problems of loss of waterhead and would also be clo by floating debris, requiring continuous maintenance. The barriers were firs used in the Gezira irrigation scheme in the Sudan and later in the Tahrir Prov in Egypt. Records from the Gezira barrier showed an average monthly catch of 3407 snails in 1958-59.

VII RECOMMENDATIONS

The provision of adequate financial resources to carry out the initial phase o control on a large scale will call for funding far beyond that which many individua governments can provide; furthermore, aid from bilateral and multilateral donors m be properly integrated with national health budgets in order to initiate new contro

programmes and expand existing ones where appropriate.

The rapid dissemination of information will stimulate and open up new channels for research and progress and will save considerable duplication, time, effort and money. WHO is rendering invaluable service in this direction.

Funds for training courses and grants for fellowships are also very essential.