

The Pest and the Parasite

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KINDLY DISPOSED persons (including scientists) have at various times publicised several different suggestions for dealing with the coconut pest—*Promecotheca cumingi*.

As the public has been informed, the Minister of Plantation Industries has set up a Campaign Committee to direct all operations against the pest. The committee includes representatives of the Coconut and Tea Research Institutes as well as of the Central Agricultural Research Institute. The chairman of the Campaign Committee is Mr. R. H. de Mel. If any member of the public or any scientist has suggestions to place before the committee they should communicate in the first place with the Officer-in-Charge, C.R.I., Bio-control laboratory, No. 291/27 Havelock Terrace, Colombo (Telephone 85957).

I have consulted the Campaign Committee regarding some recently published suggestions, "demonstrations" and advertisements of new methods to deal with the pest, and I wish to report as follows:—

The committee regretted the failure of many proponents of novel suggestions to communicate directly with them. They expressed their fear that the publicity given to plausible looking proposals might induce people to spend money, buy equipment and engage in various operations which are bound to prove fruitless and which may even do damage to their palms. The public are requested to seek advice only from the committee which is quite competent to give it.

There are innumerable ways of destroying the adult insect *Promecotheca cumingi* on a home-garden scale, though if the infestation is prevalent in the area it will recur very soon. Our problem, however, is how to deal with the eggs, larvae, pupae and adults on tens of thousands of tall palms at several sites of infestation. All international experts consulted including Dr. Ray Smith, FAO consultant, and Doctors F. J. Simmonds, Director, and V. P. Rao of the Commonwealth Institute of Biological Control, as well as the scientists on the Campaign Committee, have unanimously recommended one program: that of biological control. This is the method that has succeeded in other countries in holding down the pest to levels at which economic damage is not sustained.

CERTAIN parasites which attack the eggs, larvae and pupae of the pest are bred in the laboratory and released on a systematic basis. In due course they become self-propagating in the field, and then no further special releases become

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necessary. The parasites can be relied on to deal effectively with the pest wherever it is found. The program of biological control is relatively inexpensive needing no special equipment in the field as are needed with insecticides. The parasites which are described below are minute flying creatures: they may not be ordinarily seen or identified even though they are at their work among the palms. They do not attack the adult (beetle) stage of the pest. There is no known parasite which attacks the adult beetle. But by attacking its eggs, larvae and pupae, the parasites hold down the pest population.

The bio-control laboratory referred to was set up to breed imported parasites, to plan systematic releases and to evaluate results. This laboratory is manned by a research staff drawn from the Central Agricultural Research Institute, Peradeniya, the Tea Research Institute and the Coconut Research Institute. The temporary services of Dr. P. R. Dharmadikari of Bangalore have been obtained for the laboratory by arrangement with the Commonwealth Institute of Biological Control.

The parasite *Achrysocharis promecothecae* attacks the eggs of the pest. It was imported from Singapore with the kind assistance of Dr. A. F. Murphy, Professor of Zoology, Singapore University through the good offices of the Commonwealth Institute of Biological Control. Mr. G. P. B. Karunaratne, Curator, Entomological Department, Colombo Museum went to Singapore in this connection.

RELEASES have been made from the laboratory, and the parasite is now found to be well established in the field. Dissections from recoveries prove that the parasite is effective in the field. Special releases have now been discontinued as it is expected that the parasite will be self-propagating in sufficient strength.

The parasite *Dimmockia javanica* is effective against larvae of the pest. Supplies were obtained from Singapore as in the case of *Achrysocharis promecothecae*. Thirtyfive thousand eight hundred and thirty-two parasites had been released at 343 sites up to March 6, 1972. Dissections from recoveries have shown it to be effective in the field and this parasite will soon be well established.

The parasite *Pediobius parvulus* is very effective indeed against both the larvae and the pupae of the pest. Supplies were obtained from Mr. B. P. Singh, Entomologist, Department of Agriculture, Fiji through the good offices of the Commonwealth Institute of Biological Control and the efforts made by Dr. H. E. Fernando, leader of the scientific group of the Pest Campaign Committee. Eight thousand eight hundred and thirty-seven parasites has been released at 61 sites by March 6, 1972. Releases will be made at an increased rate during the coming weeks. Evaluations will follow and as soon as the parasite is well established releases will cease. Dissections of recoveries have shown that this parasite, too, is effective in the field.

Although biological control is a slow process and although it took us some time to import and breed the three parasites, it can be confidently expected that within a matter of months the pest *Promecotheca cumingi* will be kept down to levels at which no economic damage is suffered.

Before I come to other suggested methods of control I may refer to the "spread" of the pest in Ceylon. The seat of infestation is in the Dehiwala area. The natural spread of the pest has been slow and the primary infestation has spread over a few square miles from the centre and no further as yet. However, small local infestations have been detected at various places far removed from the primary site. These infestations are not due to the natural spread of the insect but to its being carried in trains, buses, etc. This fact has been established by a study of sites themselves which are always close to railway stations, bus stands, etc.

I NOW DEAL with the other methods of attacking the pest:—

The Campaign Committee itself at first resorted to the spraying of DDT in certain areas. These were chiefly out-lying sites to which the pest had been carried and not in the areas of primary infestation. These sprayings were intended only as a temporary holding operation to buy time until the parasites were imported, bred and released. The central area of infestation was not covered by sprayings because this would have delayed releases of parasites. DDT is effective against the adult insect and also against the larvae; it has a residual effect for a few weeks, but to keep down the level of infestation requires repetitions of spraying. It is inadvisable to use DDT in thickly populated areas.

However, had the spraying of insecticides been considered a satisfactory method of dealing effectively with the pest, and not as just a holding operation, low toxic insecticides with similar residual effect like Malathion could have been used. The Campaign Committee recognised that insecticides would have to be used repeatedly, with expensive equipment; and that the effectiveness of spraying was not adequate. Regarding sprays in general it has been noted that even a power sprayer cannot deal with more than 80 trees a day. For this reason alone large-scale spraying repeated from time to time is an impracticable program.

The insecticides referred to above are certainly far more effective than the soap solution which has been published. Soap is no doubt one of the oldest known insecticides and acts directly on the adult *Promecotheca cumingi*, suffocating the insect by entering the breathing tubes. This effect ceases, however, when the spray dries and there is only a very limited residual effect even under wet conditions. Even if the practical problems of the expense of spraying were not considerations, it is not possible to hope to bring the pest under control by the use of soap sprays.

EVEN LESS effective is the Rosin Smoke Treatment that is recommended by one scientist. At best the smoke might temporarily repel the adult insect. The treatment would have to be repeated at frequent intervals and it is quite impracticable to use it on a large scale.

Other suggestions have been made for the systemic treatment of palms by injections and I have seen commercial advertisements in this connection. This method would be laborious; it would involve contamination of the kernel and the water of the coconut which is food. It is quite expensive, requires to be repeated at frequent intervals and is relatively ineffective.

I repeat that from the point of view of practical usefulness in dealing with large-scale infestations of tall trees like coconut palms, over a wide area, all other methods than that of biological control have to be rejected. It certainly took some time for us to import, breed and release the parasites referred to above. The program was delayed by some misadventures with imports, and in another way by the tragic death of Dr. U. B. M. Ekanayake who was at that time in charge of the program. However, all three parasites are now being successfully established in the field and are expected soon to be all of them self-propagating so that special releases will be discontinued. In a matter of months we expect the pest to be held down to levels at which it can do no economic damage.

The spraying program, which was as stated a holding operation, has now ceased.

GOOD INVENTIONS AND BAD INVENTIONS

My guess is that the greatest desire of the Third World is to have the same traffic jams and the same air pollution and the same environmental disharmony as the developed world has, and to call it progress. But these are matters of degree. Let's not worry about pollution in the Third World until we're sure that people have enough to eat and enough to wear, and shelter. One knows that one can provide that without environmental damage. Let's not let up on that effort. I remember hearing Nehru once say that there were some inventions that should be made and some that should not have been made. I think that if you were deciding between good inventions and bad you would have electric light, which is a great liberating invention and you might have bicycles, though you might draw the line at automobiles.

John Kenneth Galbraith: *Ceres*: 1971. Vol. 4 No. 3 p.19.