

* A PRELIMINARY NOTE ON THE SUCCESSFUL TREATMENT
OF THE JASMINE BUG (*ANTESTIA CRUCIATA*) BY DUSTING
CALCIUM CYANIDE

BY

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Introduction. In December 1926, a report was received from a Flower merchant of Bellary regarding serious losses sustained by him by insect attack in his jasmine garden during the past seven years. After preliminary enquiries made through the Agricultural Demonstrator, Bellary, the garden was visited by the writer on the 28th February 1927 in his company and the actual conditions were studied. The insect responsible for the damage was found to be *Antestia cruciata*—known to be a pest of Coffee and Jasmine.

Conditions of Jasmine cultivation near Bellary. There are about a dozen Jasmine gardens in the neighbourhood of Bellary supplying Jasmine and other flowers and certain sweet herbs for the market and as there is a never-failing demand for flowers and aromatic herbs throughout the year for purposes of ladies' toilet, the garden owners form, on the whole, a flourishing and prosperous community. The garden reported to be infested is situated at Bisanahalli about 3 miles from Bellary on the Bellary-Gooty Road. It is about 2 acres in extent and located on the southern bank of a sandy water course and possesses a fresh water well from which water is baled out by means of a mhote for purposes of irrigation. The jasmines and other flowers are all grown in bush form and since the different varieties of jasmines have their own particular times of flowering, individuals of the same variety are usually planted together in small plots for convenience in watering and cultivation. One group of jasmines—composed of varieties of *Jasminum sambac*, such as *Iruvantige* (*Iruvakshi*), *Dundu-mallige* (double jasmine and *Sogi-mallige* and *Jasminum angustifolium*, *Sooji-mallige* or *Man-mallige* (Sanskrit, *Vana-mallika*) was stated to yield flowers from March to June, while a second group consisting mostly of *Jasminum auriculatum*, locally known as *Sanna-mallige* or *Mondaralu moggi*, from June to September and a third mostly *Jasminum grandiflorum*, known as *Jajimallige* (Sanskrit, *Jati*), from August to November. From November to February flowers of *Rhinacanthus communis*—*var montana*—an Acanthaceous plant, locally called *Naga-mallige* were said to be placed on the market instead of

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the true jasmines which would not be in flower then. In addition to jasmines other flowers like Oleander and certain sweet smelling herbs were also under cultivation.

These varieties were reported to receive special attention only just a month previous to the time of flowering. All the old leaves were pulled out and the beds were hoed, weeded, manured and irrigated. During the period of flowering the plants were given periodical irrigations, but when it came to a close they were left to themselves till the flowering season.

The pest—the nature and extent of its damage—The Jasmine Bug—*Antestia cruciata*—is a medium sized Pentatomid bug about 8 to 10 m.m. long, light brown with conspicuous yellowish markings. It generally hides inside the bushes among leaves and twigs, but at the time of flushing, seeks the tender shoots or flower-buds and sucks their juices so that ultimately they wilt and dry up. The eggs which are white and sculptured are laid in clusters of 10 to 20 on leaves or on the stalks of the inflorescence. The eggs and the young ones are generally present in large numbers on many of the bushes that have finished flowering. The young bugs do not appear to be able to do much harm and the real damage would appear to be caused by the adults puncturing the tissues of the tender leaf and flower-buds leading thereby to a considerable reduction in the yields of flowers. The owner of the garden under report stated he had been suffering a loss of about Rs 800 every year on account of this pest.

The life-history of the pest has not yet been studied, but it is not likely to be different from that of other similar Pentatomids about which data are available.

The eggs were found parasitised by two species of Chalcids, one bluish-black, and the other black with a light yellow abdomen.

Remedial measures. The garden-owner reported that he had been in the habit of setting coolies to handpick the bugs as far as possible and crush them, but had found no relief therefrom since he had, notwithstanding such efforts, found no appreciable reduction in the number of bugs or in the damage done. Handnetting was found impracticable owing to the denseness of the bushes and the secretive habits of the adult bugs. To test the effectiveness of Calcium cyanide on these bugs, two small badly infested bushes of *Jasminum sambac*, from which the coolies had been able to pick out only about 15 bugs, were taken up and dusted with the help of a small hand duster. As the dust enveloped the bushes, numbers of bugs were found to fall to the ground stupefied by the fumes. Subsequently on beating the gusted twigs a further number was observed to drop to the ground. On the whole about 78 bugs could be collected from these two bushes. The gardener was struck with the effectiveness of the dusting and realised how inefficient comparatively, the handpicking had really been.

The bugs picked up from the ground were kept under observation and as it was noted that about 50 per cent of them did come back to life after a time, it was found necessary to have the bugs picked up from the ground soon after dusting and killed by throwing them into kerosenated water.

Subsequently dusting was tried on a larger scale by means of a knapsack duster. While good results were obtained it was observed that several of the bugs escaped the fumes by flying away to neighbouring bushes. It was also noted that the consumption of the dust was rather heavy as about $\frac{1}{4}$ lb. was found necessary to cover each large bush effectively. Hence a small tent 2 yards square and 4 feet high was prepared of coarse cotton cloth—of a size capable of covering the larger bushes completely—and tried. It was slipped over the infested bushes and propped up by a few bamboo poles, after which Calcium cyanide dust was pumped in with the aid of the duster. The results were found to be very satisfactory, as thereby the escape of the bugs was prevented and the consumption of the dust reduced to one-third the former quantity.

Calcium cyanide is a new insecticide that promises to be of immense utility under certain conditions. When exposed to the atmosphere, this chemical absorbs water vapour and breaks down instantly into hydrocyanic acid gas and lime. During the process of dusting particles of calcium cyanide reach the spiracles of insects and since the hydrocyanic acid that is produced by such decomposition is very powerful in its nascent condition, the effect is instantaneous. On the other hand the residue left after the gas is set free, is lime, so that the dust becomes absolutely harmless to men and animals in a short time. Scorching of leaves is observed to take place only in cases where the chemical is dusted when the leaves are wet with dew or rain drops. Dusting should therefore be avoided at such times, but can be done with impunity when the weather is dry.

The dusting has so far been tried only in certain particular parts of the garden, but wherever the treatment has been made the garden owner acknowledges that he has had a very high degree of relief and is desirous of having his whole garden treated so as to obtain complete freedom from the pest. Following the advice given, he gave in March an efficient pruning to all resting bushes, so as to drive the bugs away from such bushes; but owing to various circumstances, as for instance, the conditions of weather, it has not yet been possible to give a thorough dusting to the whole garden. It is proposed to give a trial to this method before long in order to see whether it would be possible to check the pest completely.

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