A Brief History of the Black Fly in Cuba, Its Distribution and Latest Developments

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I have selected as the title of the paper I am about to read you today, "A Brief History of the Black Fly in Cuba—Its Distribution and Latest Developments." There can be no question that this subject is one of vital importance to all Florida fruit growers, since all control measures have been abandoned in Cuba, and also on account of its proximity. In the Bahamas it has completely wiped out the citrus industry. In Cuba it is gradually spreading and will in time doubtless involve the entire island.

The Black Fly (Aleurocanthus woglumi Ashby) was first discovered in Cuba in August of 1915 in a farm near Guantanamo. Specimens were sent by the owner of the property, Sr. Manuel Bertran, to the Agricultural Experiment Station at Santiago de las Vegas and were there determined by the entomologist, Patricio Cardin. In April, 1916, Mr. Cardin and the pathologist of the Experiment Station, Dr. John R. Johnston, were engaged in making a survey of the citrus groves and plantations of the island for citrus canker. While in Guantanamo they made observations as to black fly conditions and were able to appreciate the intensity of the infestation and the necessity for taking immediate measures to control it. In view of the fact that Johnston and Cardin found the black fly only at Guantanamo and considering the economic importance of the insect, since it not only attacks the plants of the genus citrus, but also the coffee, mango, guava, sapota, sapodilla, star apple, pomegranate and many other plants, the Honorable Secretary of Agriculture, Sr. Emilio Nunez, solicited and obtained a credit of $10,000. A Presidential Decree, No. 838, July 3, 1916, created a Commission of Plant Sanitation, with the object that this commission should try to combat the plague of the black fly until it was completely extirpated. The commission was also to try to prevent in the future introductions of other pests injurious to agriculture and to organize a system of nursery inspection. Under the direction of the commission, during the summer and fall of 1916, a careful inspection of the vicinity of Guantanamo was made. This inspection included yards, gardens, farms and neighboring towns. In fact, every place where there might be citrus was inspected in order to determine the extent of the infestation.

Since the black fly had been found only
in Guantanamo and a few of the nearest towns, such as Jamaica, Carrera Larga and Ermita, it was clearly evident that its spread to the coffee plantations in this mountainous region should be prevented. Also it was perfectly obvious that efforts should be made to prevent the spread and propagation of the black fly in the orange districts, of which there are many in Cuba.

DESCRIPTION

The black fly is a bit difficult to describe, but we may begin by saying that it is not a fly but a sucking bug, of the family Aleyrodidae. In its adult stage, or the insect completely developed, it looks very much like a small fly, a trifle larger than the well known gnats, and in its form and manner of moving around, like the drain fly of the family Psychodidae, so that the name “Black Fly” is the most descriptive we can find. The color of the adult insect is slaty gray, more or less blackish or bluish, according to the length of time out of the pupal shell and this is the color of the four little wings which it carries almost vertically over the body. Each of the anterior wings bears two whitish spots on the front border. The color of the body is reddish, the eyes are very prominent, and the antennae of good size with relation to the body. The adult black fly prefers the young and tender shoots of the orange trees where they congregate to deposit their eggs. These eggs appear as tiny points placed in the form of a spiral, always on the under side of the leaf. I have seen these insects fly in clouds from one tree to another, and without doubt they may fly and be carried by the wind for long distances. A period of ten days or two weeks passes before the larvae emerge from the eggs and these then crawl about over the under surface of the leaf seeking a place to begin operations. Once settled they thrust their tiny beaks into the leaf and begin to extract the plant juices. In heavily infested districts, the under sides of the leaves of all citrus and other orchard trees will be found to be completely black and but little time elapses before the trees begin to lose their leaves, which curl, wither and finally fall. The fruit itself loses flavor and sweetness. Trees attacked by the black fly and which lose their leaves soon die as though hit by a blast.

The intermediate stage between the larval and adult stage of the black fly, called the pupal stage, lasts but few weeks. The black fly in this stage is nearly as large as the head of a pin, looks like a glossy black scale and is covered with tiny spines. To these the insect owes its name of “Spiny Citrus White Fly.” The black fly, so-called, is a true white fly, of the same group with which the Florida growers are so familiar, but is the most dangerous and most difficult to control of all the white flies.

The most efficient method of controlling this pest is by the fumigation of the plant with hydrocyanic acid gas, but this method is very costly and requires a special apparatus, canvas tents, etc., for its use, and is very dangerous to use except by those thoroughly familiar with this method of control. Climatic conditions in Cuba and Florida are not favorable to fumigation. Another method is the use
of oil emulsion sprays. These are efficient if properly made and applied. The object of emulsions is to cover the body of the insect and kill it by asphyxiation. The emulsion should be thoroughly applied with special nozzles in order to reach the under sides of the leaves and so cover the insects entirely. Neither of these measures is anything more than a partial control measure and both are costly. The spraying must be repeated at frequent intervals and must be continued.

Much has been said, in Florida, as to the dangers confronting the Florida producer through the presence of the black fly in Cuba, the Bahamas and elsewhere. These dangers are real and the measures to prevent entry of this pest should by all means be continued, and doubled and redoubled. It will be readily understood that if the black fly gains entry into Florida another heavy and continuous burden of expense will be imposed upon the grower, already carrying a heavy production cost.

I am now ready to tell you how the black fly was combated in Cuba. During the year 1917, spraying operations were carried on using whale oil soap almost entirely. Inspection work in Havana Province during the year showed that the black fly was confined to a five-mile zone with the Botanical Gardens at Havana as a center. About this time the work which had been started at Guantanamo with good prospect of being successful was abandoned and as a result the black fly is now firmly established in Oriente Province. Early in 1918, the State Plant Board of Florida, at the request of the Cuban Government, detailed temporarily several of its experienced inspectors to assist and advise the Cuban Bureau of Plant Sanitation. A campaign based upon the experience gained in citrus canker eradication in Florida was inaugurated. Field inspection on a large scale was begun and spraying operations, together with severe pruning, were undertaken. A nursery inspection system in conjunction with the effort to eradicate black fly was organized. Plenty of money was available and conditions at that time were most favorable for eradicating the pest. Work was continued vigorously for a time and progress was made. This effort was unfortunately only sporadic. The system inaugurated promised to accomplish the result aimed at—eradication—and no doubt would have done so, had it not been for a change in administration in the Department. From then on the work was not followed as suggested by the Plant Board, and now we find the black fly situation in Cuba hopeless so far as eradication is concerned. Illegal movement of nursery stock has caused the spread of the black fly to as many as five or six new centers in different parts of the island. When the work on the black fly was first started a decree was published prohibiting the movement of all plants of the genus citrus, also guavas, mango, coffee, sapodilla, pomegranate, star-apple and red mammee, or other host plants of the black fly. Later the black fly was found in many of the patios and yards and gardens of houses in the Vedado, a residential district of Havana, and the decree was made to require the inspection and certification of all
plants to be moved from the infested district. Owing to the small number of inspectors at this time, a strict surveillance over the illegal movement of plants could not be maintained. Prominent individuals moved infested plants from their palatial residences in the Vedado to their no less pretentious country homes. In this way the black fly reached Alquizar, about fifty miles southwest of Habana. Control operations were always started in the center of infestation and not on the outskirts. Thus, while a fair attempt at spray control was being made by the authorities in the heavily infested districts of Habana, by the time they thought they had the situation fairly under control it had gotten out of hand and the outlying districts were becoming infested. I am not pretending to follow a strict chronological order but I am picking out the salient features of the black fly campaign as it was conducted in Cuba.

Provincial inspectors were appointed to make inspections that came their way and to make periodical reports to the head office in Habana. I am going to cite only one instance of the efficiency of these Provincial inspectors. Cienfuegos is about the fourth or fifth largest city in the island, located in Santa Clara Province, very important as a seaport on the southern coast. The inspector for this province was supposed to make an inspection every six months of all the nurseries in the province, especially those around Cienfuegos, of which there were some four or five large and important ones. His reports were always the same, that is, to the effect that he could never find the black fly in any of the gardens and nurseries inspected and that he would recommend the garden for certification without the slightest delay, as the gardeners and nurserymen were moving plants every day. Then one day two of the nurserymen wrote in to the Havana office and asked when we were to make the next inspection. They stated that the Provincial inspector had not been around as was his custom every six months and that they wished their certificates. One of them sent a few grapefruit leaves along in his letter and asked what was the bug attacking his citrus and what he should do to control it. It was the black fly. Charles Ballou, an American attached to the Bureau, was sent down to Cienfuegos to look into the matter and came back with the astounding report that all of the nurseries were full of the black fly and that plants had been freely offered for sale with the black fly on them. It happened that this Provincial inspector was a mulatto chiropodist and that his appointment as inspector had been made as a political reward. Whether he was removed from office I cannot say, but as election time was drawing near and his services were needed in the coming campaign he was doubtless allowed to continue drawing his pay, but further inspections were made by inspectors from the head office.

Another heavy infestation was found in the very geographical center of the island at Macagua in the grove of a Mr. Hodges. This infestation is not far from Ceballos, which is a citrus growing center operated largely by Americans. Most of the fruit grown here goes north by way of Nuevi-
tas to New York and so does not pass through Florida. Another slight infestation was found at Antilla on the north coast, east of Nuevitas and La Gloria. We have had no further reports on this infestation. The latest infestation reported to the Havana office is at Cupey, in Oriente, several miles north of Manzanillo on the south coast. The black fly is also at the Experiment Station at Santiago de las Vegas, about fifteen miles south of Habana. It had evidently been planted there with malicious intent and was not discovered until too late to take measures for complete control. Immediately upon the discovery of this infested center the Chief ordered the cutting down of all the citrus in the vicinity of the center of infestation. In this center were several immense old seedling mango trees about fifty feet high and a number of fine varieties of citrus used in experiments and propagation. The citrus trees were cut down, but the old mango trees were left standing. They are still there, black with the pest.

For all practical purposes we may as well consider Cuba as one hundred percent infested with the black fly. All spraying, pruning and other control operations have been abandoned for several months on account of the lack of funds. An efficient campaign and plenty of funds to draw on in an emergency would have controlled the black fly in Cuba and today we would not be faced by the menace of having the pest in our own groves.

In any discussion of the black fly consideration must be given to the efforts being made to prevent introduction of the pest into the United States from the infested countries. The protective measures are both state and federal quarantines. Here in Florida they are administered by inspectors of the State Plant Board stationed at the ports of entry. Materials which may be dangerous are inspected and fumigated. The Federal Government considered imposing a quarantine which would have almost amounted to an embargo on certain Cuban shipments. On the grounds of certain pledges made by the Cuban Government and to avoid serious interruption of trade and traffic, the proposed measure was somewhat modified. The Cuban authorities have not lived up to the promises made at the hearing by the Federal Horticultural Board at Washington in December of 1920, when the quarantine question was under consideration. They agreed to maintain a zone 200 feet on each side of the principal railroad lines throughout Habana Province which was to be free from all black fly host plants. An attempt to do this was immediately made, but where influential property owners refused to allow the Bureau of Plant Sanitation to cut and prune their trees the host plants were allowed to remain as before. Freight shipments coming through these infested localities are subject to infestation and the black fly has every chance in the world of being brought to Florida if it were not for the efficient work done by the quarantine inspectors of the State Plant Board. Their fumigation work at Florida ports of entry has doubtless destroyed the black fly in all its stages many times and has repaid a hundred times the sums outlaid in the es-
establishment of fumigation houses and maintenance of quarantine inspection.

We cannot hope that Cuba will be able to control the black fly. Such a thing is absolutely impossible. They had their chance to do a wonderful piece of work and lost it. I do not wish to place any dis-

credit on the men who were in charge of this control work in Cuba. They had the interest and earnest desire to eradicate the black fly, but they never had the full authority to go ahead and take the stringent measures which were so needed.