

REPORTS

ERADICATION OF THE MEDITERRANEAN FRUIT FLY¹

THE Committee of Seven, appointed to make "careful studies of the present status and possibilities for eradication of the Mediterranean fruit fly, also to study the desirability of the maintenance or expansion of the present program, or alternative possibility of commercial control," reports as follows:

Economic Background

The economic situation of Florida, the immediate future of the state, is definitely and intimately related to the policy which may be adopted in relation to the Mediterranean fruit fly. The region involved in the infestation is 34 per cent. of the land area of Florida. It contains 72 per cent. of the bearing citrus trees, and based upon a three-year average, 80 per cent. of the carload shipments of citrus fruit originate in this area. The annual income from the citrus crop and from other host crops which may be affected by the fly is upward of \$60,000,000. A capital investment for the same crops exceeding \$300,000,000 is threatened. Industries dependent upon citrus fruit represent an annual income of approximately \$52,000,000. Agriculture, of which the citrus and kindred industries represent the larger part, is the economic foundation of the state. From one quarter to one third of the income accruing to the state, other than that pertaining to the tourist trade, may be attributed to agriculture. The permanence of the home and the adequate support of the families of 40 per cent. of the rural farm population of Florida is threatened by the fly. The income for the state for the purpose of government is largely affected by the conditions of the citrus industry and its kindred commercial, transportation and industrial development.

In the event the fruit fly should escape from Florida, infesting the regions of the South and West, capital values invested in properties producing susceptible fruits aggregating \$1,800,000,000 and producing annual incomes of \$240,000,000, are threatened. Infestation by the fly would bring chaos to many agricultural regions of the South and West. Their interest in the policy which may be adopted with relation to the fruit fly is even greater than that of Florida.

The consumers of the United States, likewise, are affected. An infestation of the Mediterranean fruit fly may affect the reduction of susceptible products by 25 or even 50 per cent. It is estimated that a reduction in the production of susceptible fruit by

20 per cent. will increase the cost of fruit to the consumer by approximately 24 per cent. In addition the consumer is also directly interested by the fact that the industry or trade with which he may be connected will be affected by the spread of the fruit fly.

The cost of commercial control measures and of quarantines, should the fly escape to other regions, would involve an amount difficult to estimate, but undoubtedly greater than the sum required for eradication. This cost would fall upon the national treasury, the states involved and upon numerous individuals.

This brief statement of the economic background evidences the national interests that are involved. The fact that the citrus industry of Florida furnishes approximately 40,000 cars of citrus fruit to the railroads is an indication of the wide-spread economic effect that general infestation would involve.

Eradication or Control

Basing its judgment on careful observation, the results of research and the progress toward eradication that has been made in the past three months, the committee considers eradication practicable under present known conditions. This will require vigorous effort, large additions to present forces, fearless action, maintenance of the full cooperation of Florida citizens and ample funds promptly available.

Plan of Eradication

You commissioned the committee to study the desirability of the maintenance or expansion of the present program and plan of eradication. Particular attention has been given to this program and plan of eradication as now operating. The committee recommends that the work of eradication be expanded. Such expansion, vigorous and immediate, is imperative to the success of the work.

The committee believes advisable a system of certification permitting the entry of susceptible fruits and vegetables into interstate commerce. Experimental evidence indicates that a system of processing whole fruit may be devised which is economically feasible and will insure freedom from the fly. Under such procedure: (1) Reimbursement to growers from the national treasury is not required; (2) a sound economic background for the industry is restored, and (3) the full cooperation of growers and citizens of Florida is maintained.

An arrangement which assures that the products entering into interstate commerce are free from all stages of the fly and which permits the growers to continue their business and industry is essential.

¹ Report made to the Honorable Arthur M. Hyde, Secretary of Agriculture.

Attached hereto is a general statement of a program that the committee considers necessary to carry out the work of eradication. It recognizes, however, that as time goes on modification may be necessary and it has confidence that such modifications should be determined by the law enforcement and research organization in charge of the work.

Progress Made in Eradication

In spite of the fact that the area considered as infested has shown accessions, the progress toward eradication has been rapid. Centers of infestation have been so thoroughly cleaned, and sources of infestation removed, that in the infested zone it is difficult to find any of the stages of the Mediterranean fruit fly. At the beginning of the campaign flies were numerous, easily found, and existed in great numbers at points of infestation. Measurement of progress is difficult. But the committee has been impressed with the rapidity of the clean-up work, the effectiveness of the poison spray campaign, the progress of inspection and its increasing thoroughness. Upon every side there is found evidence of increasing efficiency, and conviction upon the part of those in charge that they are making progress. A description of the physical equipment and of the methods used in carrying on the eradication program would be interesting but appears unnecessary in this report.

Representatives of organizations, citizens, joint committee of the Florida Legislature and the Plant Quarantine Board, as well as members of the staff of the federal and state organizations cooperating in this work, were examined by the committee. We were impressed by the solidarity of purpose.

No intimation was apparent of lack of confidence in a program of extermination. Desire was expressed to bring about eradication, and willingness to continue the work until brought to a successful conclusion was evidenced by every individual or organization represented.

Respectfully submitted,

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T. P. HEADLEE,	G. A. DEAN,
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	Committee

REVISED PROGRAM OF WORK TO ERADICATE THE MEDITERRANEAN FRUIT FLY

(1) *Inspection to Determine Spread*—Prompt provision should be made for inspection, adequate to determine the spread of the fly not only in Florida but possibly in other states. This will mean considerable enlargement of present inspection forces.

(2) *Host Fruits and Vegetable Certification*—Adequate provision should be made for the certification of all movement of host fruits or vegetables produced in any state or portion thereof invaded by the fruit fly.

(3) *Removal of Minor Host Plants*—As absolutely essential to the eradication object provision should be made under state regulation for the grubbing up or cutting down and removal—in other words complete elimination—of host plants of minor commercial importance, the object being to maintain, for the protection of the principal crop in each area, a non-host or starvation period during the interim of the maturing of such crop. It is understood that this is to replace any effort to eliminate the fruit from such alternate hosts from week to week as it ripens as impracticable both from the standpoint of accomplishment and of cost.

(4) *Destruction of Flies and Puparia*—Citrus growers in infested areas should be required under state and federal regulations to spray their groves at such periods as shall be required as necessary to destroy adult flies, and similarly, if practicable, soil treatment to destroy puparia.

(5) *Shortening of Cropping Season*—To reduce as much as possible the opportunity of the insect to breed up in the major host crop of any area, the shipping season should be terminated as early as practicable. The shipping season in Florida for citrus normally extends from September to June or longer. By more adequate provision for holding of fruit in cold storage and by enlarging methods of processing fruit it should be possible to terminate by the first of March the harvesting of the citrus crop, and similarly to shorten the period in the spring and early summer of other crops.

(6) *Orchard and Crop Cleanup*—As supplementing (5), provision should be made under state regulation for the prompt cleanup of orchards or other crops coincident with the close of the stated harvesting period. As corollary thereto all culls and discards should be promptly destroyed and drops should be removed at weekly intervals throughout the ripening and harvesting period.

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A NEW TYPE OF LYSIMETER AT THE NEW JERSEY AGRICULTURAL EXPERIMENT STATION

THE physical and chemical movement of the soil ingredients in the process of soil formation, the translocation of these in the soil profile are of primary importance in making up the soil body. The clear-cut

separation of the soil horizons, the eluviation and illuviation are resultants of this movement and translocation. A study of this movement through the soil profile would reveal the nature of the process and explain the reactions responsible for the differentiation of the various horizons.