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SUMMARY OF OVER TWO YEARS RESULTS IN BANANA FRUIT SPOTTING DISEASE RESEARCH IN Y.A.R.

In this publication is reported the summary of over two years field and laboratory trials. The trials and their efficacy in detail will be presented in final report on banana fruit spotting disease very soon.

Introduction

Banana fruit spotting disease is an important factor limiting production of banana in Y.A.R. (NASSEH 1983). The losses caused by the disease had been so severe that in some Wadis some farmers have lost their whole banana plantations.

Investigations into the disease and its control were initiated over 10 years ago. Banana fruit spotting disease was first reported by WATT (1973). Since then the disease has spread into nearly all areas of Y.A.R.

There was much confusion about the causes of banana disease. Divergent views were expressed concerning possible cause. WATT (1973) was suspicious about the disease being Anthracnose. HINDORF (1975) isolated a few fungi from different stage of disease. OSBOURNE (1975) proposed field trials involving the use of fungicides,insecticides and covering the developing bunches with polyethylene sleeves. The results were far from promising. VARGAS (1975) spoke of bacterial disease, because he isolated bacteria from young diseased banana fingers. WALLER (1977) reported that bugs were responsible for the damage. LAZAREVIC (1977) concluded that insects are not the primary cause for banana disease. Other suggestions for the causal agent made by experts and investigators ranged from deficiency of essential trace elements to the possible role of viruses and nematodes.
But now the confusion is over (NASSEH 1984)

Results

1. After a series of laboratory and field trials in 1982, 1983 and 1984 we definitly know that banana fruit spotting disease is primary caused by thrip
2. Determination of thrips species: Scirtothrips aurantii Faure
   Thrips pusillus Bagnall and
   Caliothrips graminicola Bagnall & Cameron

   Mites and other insects.
3. Isolation of bacteria and fungi from banana fruits and thrips bodies.

4. Making out of nematodes (minor pest)

5. Counting of thrips population density at biweekly intervals in Milhan (Wadi Mahmoud), Wadi Zabid and Al Barh (**Fig. 3,4 and 5**).
   Why these three places:
   - In Milhan the banana fruit spotting disease is very severe.
   - In Al Barh, in spite of thrips, there is no banana fruit spotting disease.
   - Zabid takes a position between Milhan and Al Barh.

6. Counting of population density of thrips at biweekly intervals has far reaching benificial consequenses and serves the purpose in view of:
   a- Limiting the time of treatment.
   b- Indicating of the time of appearance and disappearance of banana fruit spotting.
   c- Avoiding of heavy and frequent application.
   d- Saving of unnecessary expenses.
   e- Minimizing of hazard to applicaters.
   f- Avoiding of developing insecticide resistance by thrips
   g- Minimizing of the possible adverse effects which insecticides may have on non-target organisms.

7. Determination of a positive correllation between the appearance of banana fruit spotting disease and the population density of thrips (**Fig.3, 4 and 5**). In other words: certain population density threshold levels have to be reached by thrips before banana fruit spotting disease appears.

8. Making out that banana fruit spotting disease is a seasonal disease. This information is based on our visual observation, counting the population density of thrips, and field trials.

9. Using of natural insecticides (Neem and Garlic).
   a- Neem has long been used as an insecticide and insect repellent.
   b- Garlic was first used by the author as insecticide in West Germany.

10. Products used against banana fruit spotting disease in Y.A.R. were:

a-	Perfekthion	40 EC	at 0,2% concentration
b-	Tamaron	60 Sl	at 0,2% concentration
c-	Metasystox R	25 EC	at 0,1 concentration
d-	Garlic Extract		at 1,0% concentration
e-	Neem Extract		at 1,0% concentration
f-	Carbofuran Granulate	10 G	20g/plant circle (soil treatment)
g-	Citowett (adhesive) added to all products except to carbofuran		at 0,025% concentration was

11. Fig. 6 shows the efficacy of insecticides after four treatments at weekly intervals.

12. Fig. 7 shows the number of healthy banana fingers per bunch resulting from two years of spraying with insecticides. Fig. 5 also indicates that treatment with 2ml/l Perfekthion plus 20g/plant circle soil treatment of Carbufuran 10G was significantlly superior to other treatments in resulting of number of fruits/bunch.

13. Fig. 8 indicates the effect of applications of insecticides on banana fruit weight. Weight was increased in banana treated with insecticides, however fruits treated with Perfekthion combined with Carbofuran 10G soil treatment consistently gave higher yield than those untreated. All data from banana treated with Neem, Perfekthion, Garlic, Tamaron and Metasystox R can be seen from Fig. 8.

14. Fig. 9 illustrates the efficacy of insecticides application on banana fruits after using polyethylene plastic sleeves. It means only two treatments at biweekly intervals.

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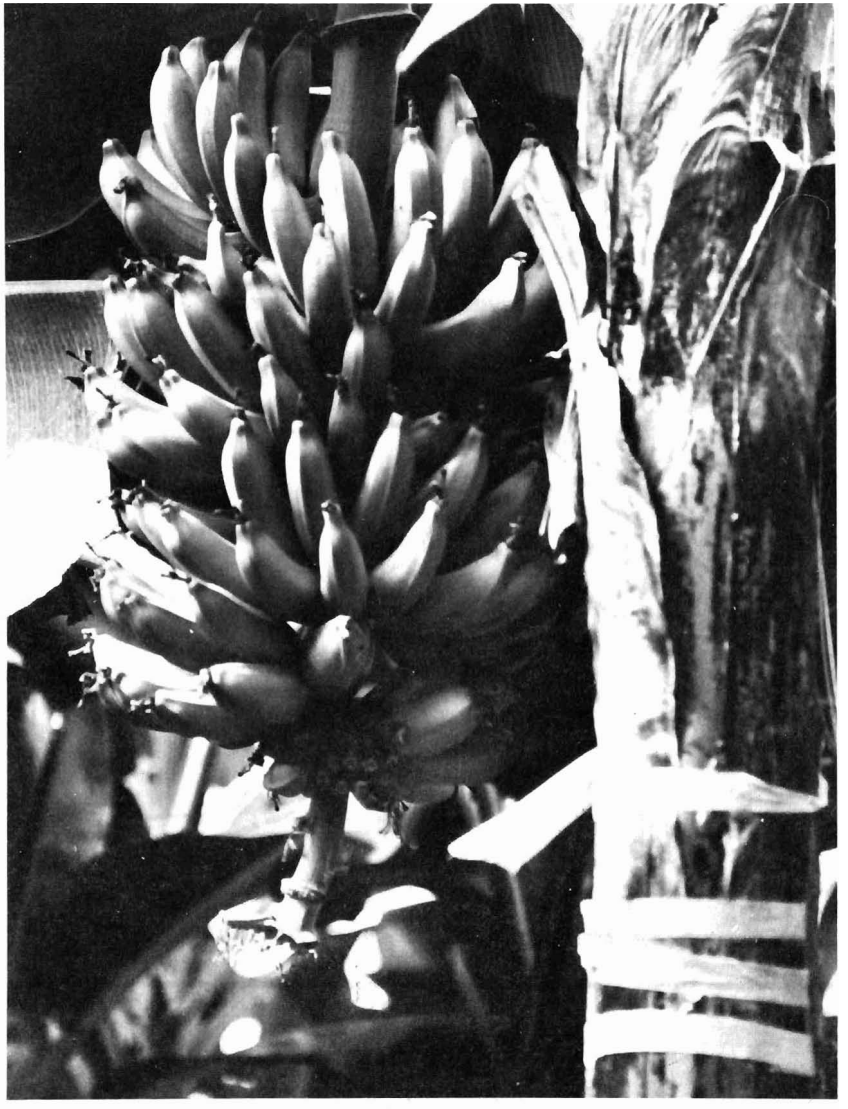

Fig. Treated Bunch

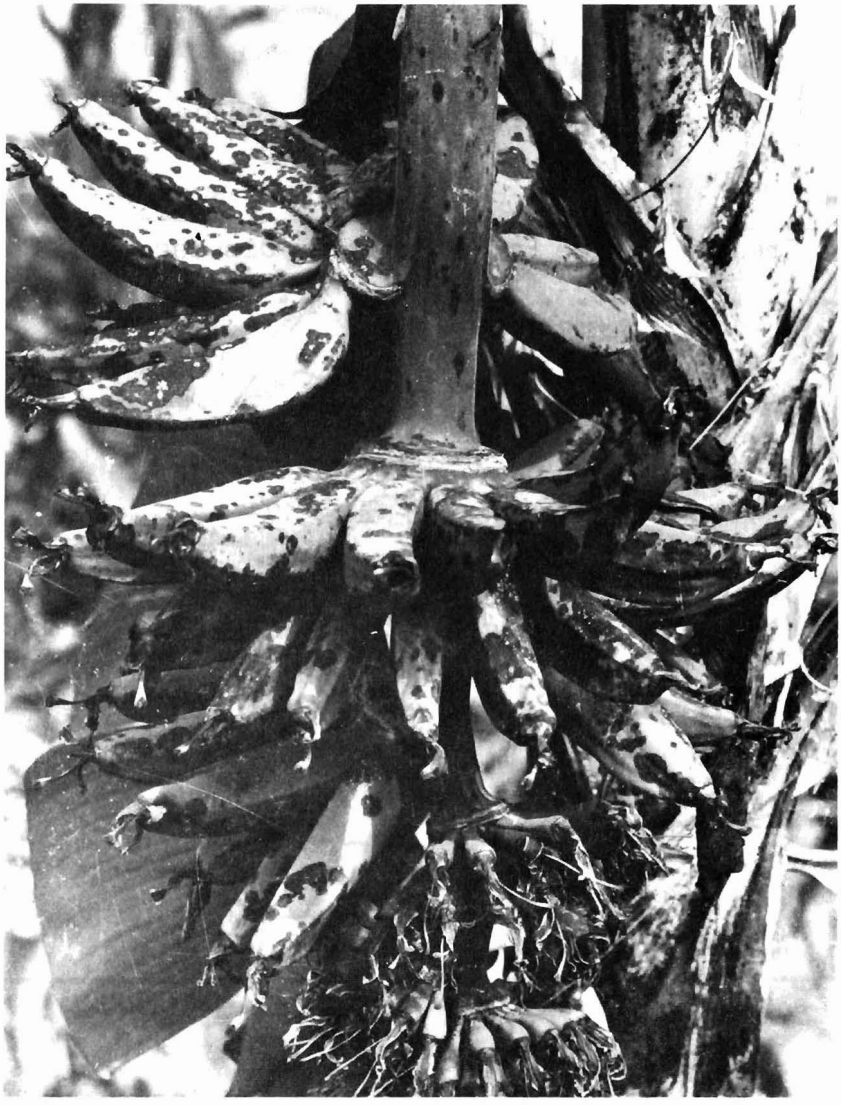

Fig. Non treated Banana Bunch

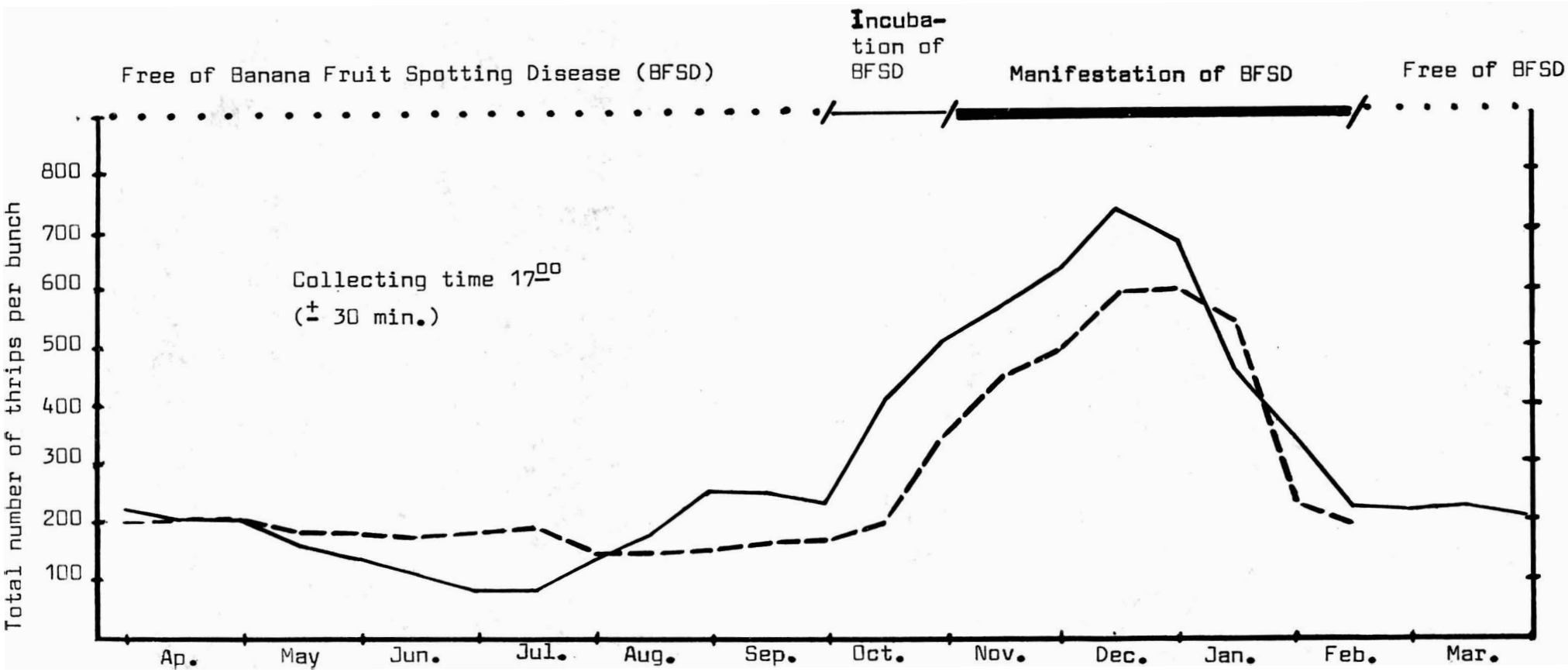

Fig. 3 : Total number of adults and larvae of Scirtothrips aurantii (Faure) on banana fruits, counted at biweekly intervals in Milhan. Average of 3 - 6 bunches (same stage) out of 40 - 50.

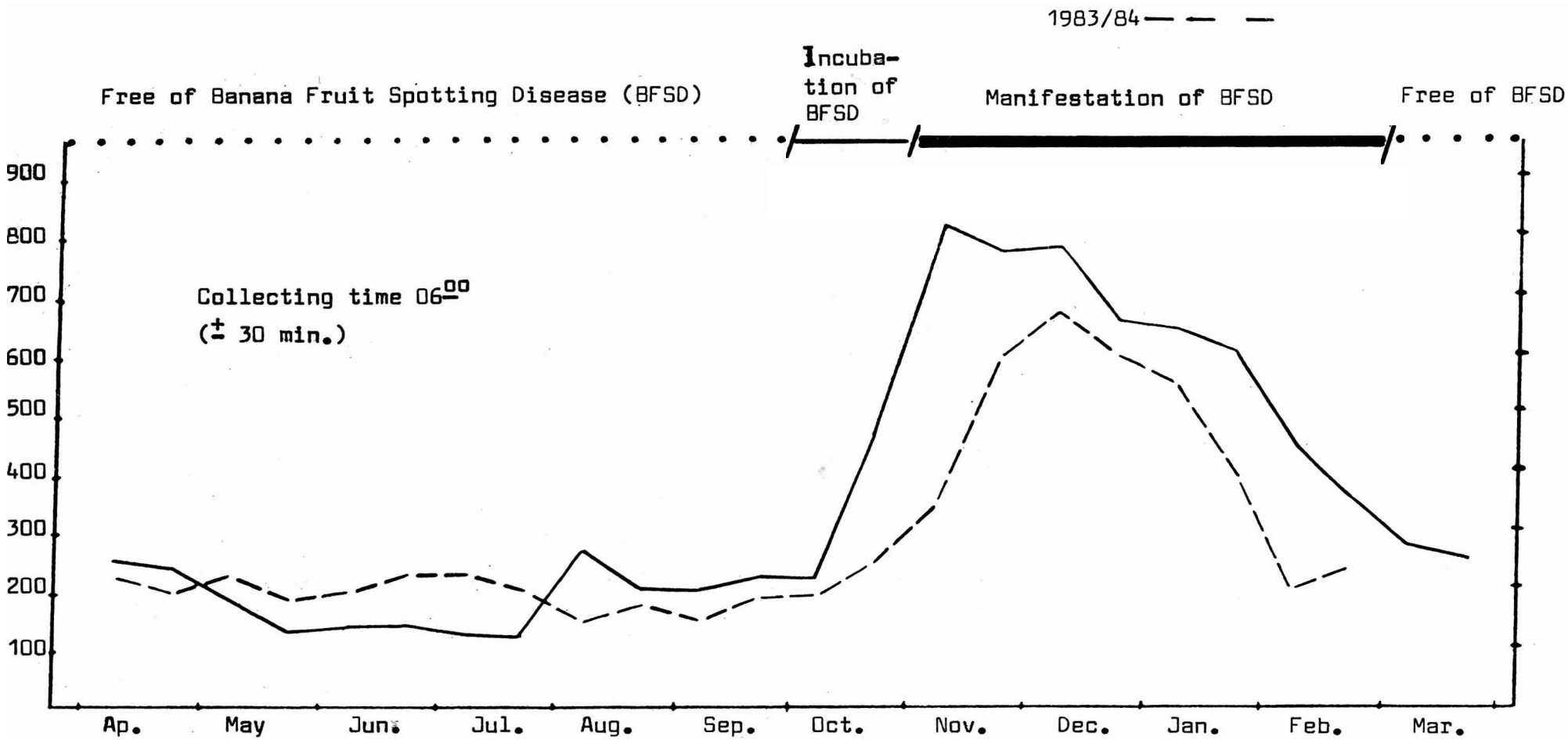

Fig. 4 : Total number of adults and larvae of Scirtothrips aurantii (Faure) on banana fruits, counted at biweekly intervals in Zabid. Average of 3 - 6 bunches (same stage) out of 40 - 50.