SOME ASPECTS OF THE ECOLOGY OF THE CITRUS RED MITE, *PANONYCHUS CITRI* (McGREGOR), IN THE EASTERN CAPE PROVINCE.

by

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Figure 1.

A map of the major cities, towns, rivers and citrus producing areas of the Eastern Cape Province.

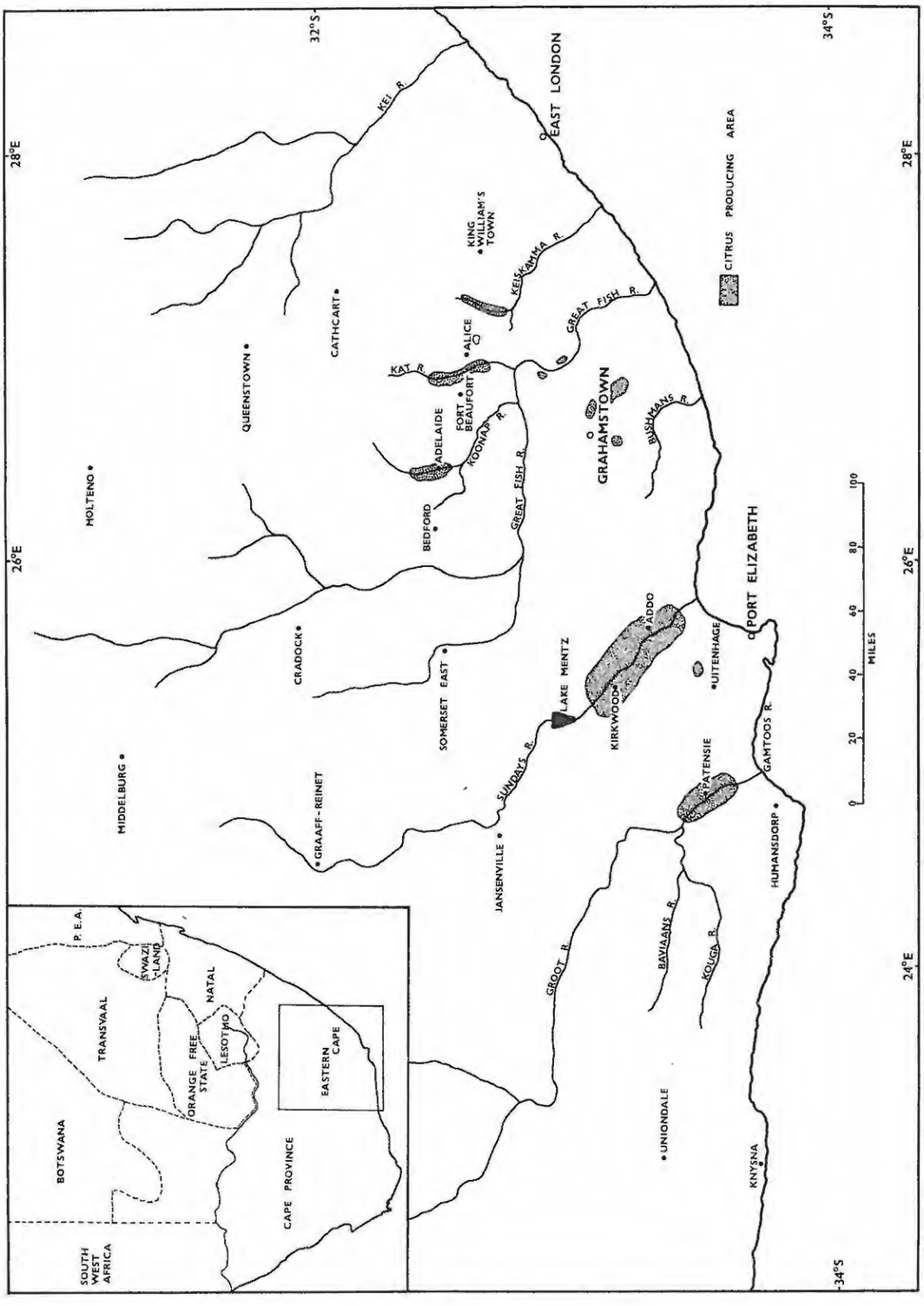


Figure 2.

A map of the Sundays River Valley indicating the sites where field investigations were performed.

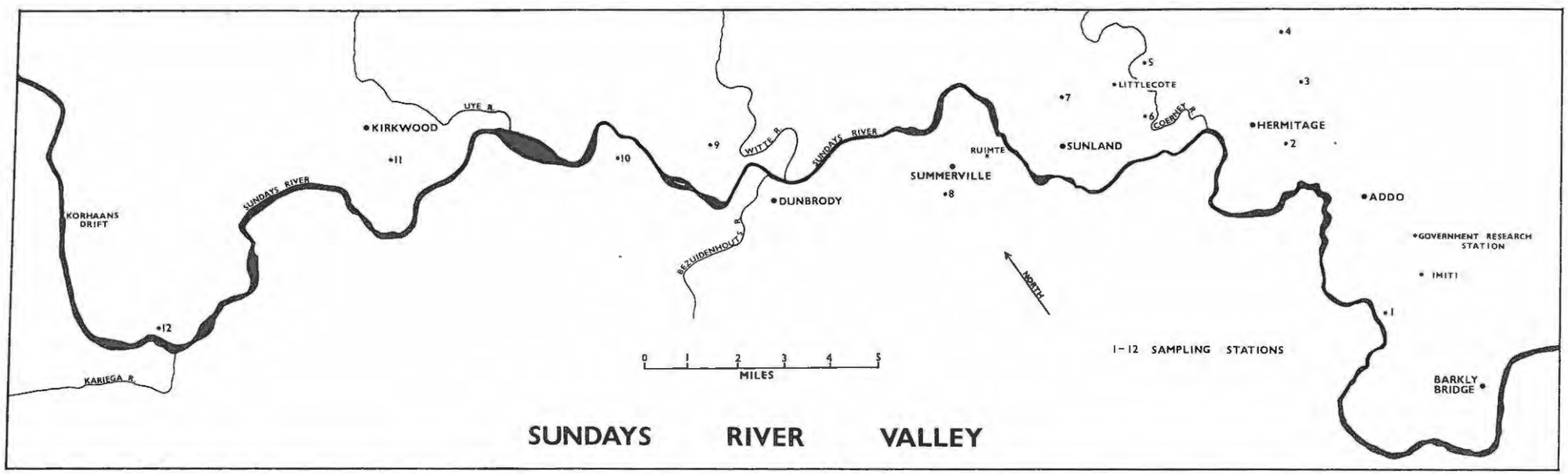


Figure 3.

A schematic diagram of the partioning of the Washington Navel citrus tree for the study of the distribution of the citrus red mite, and the predaceous mite, A.addoensis.

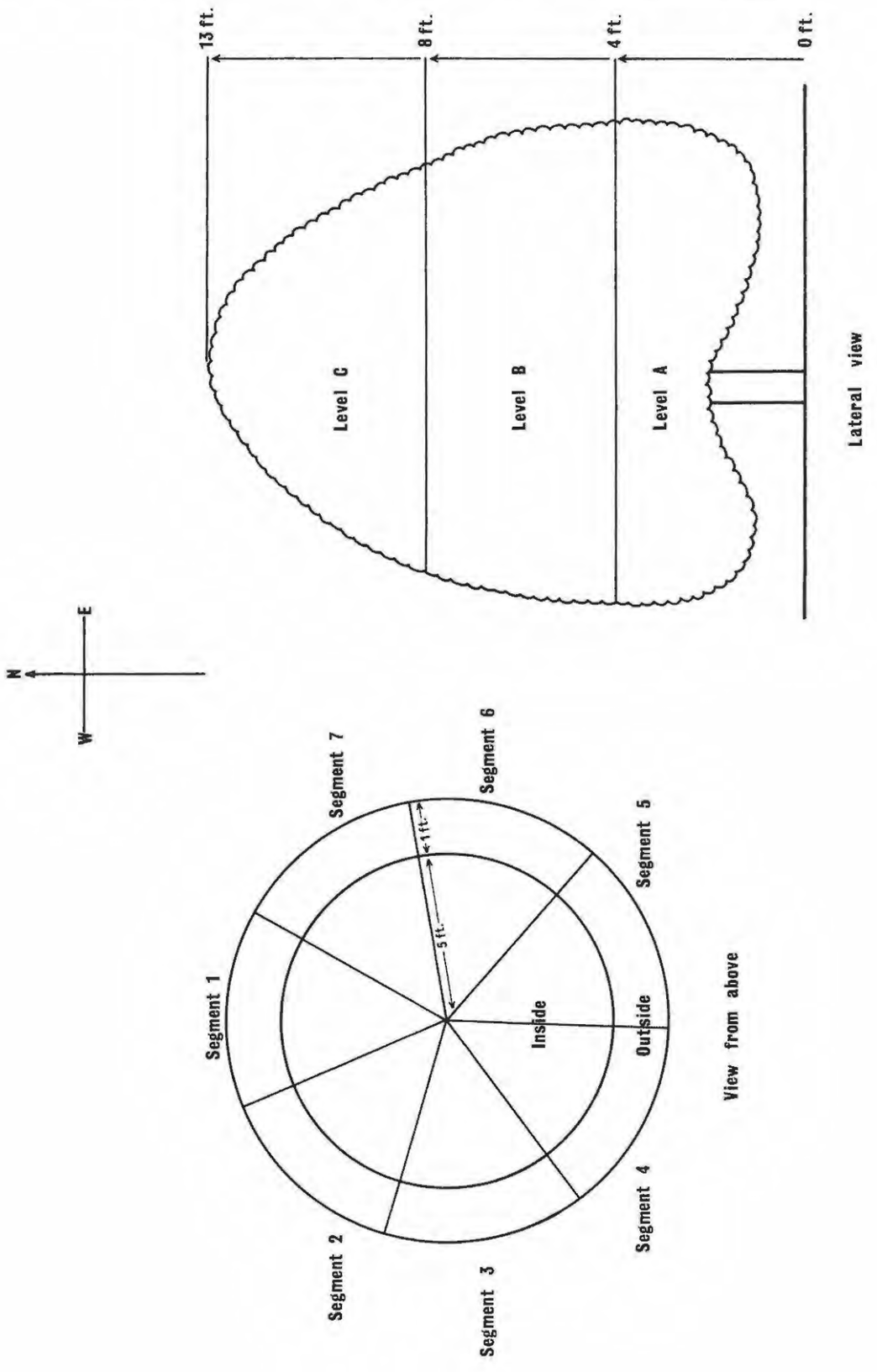


Figure 4.

The mean population density of P.citri on the northern and southern aspects of six experimental trees at "Imiti", Addo.

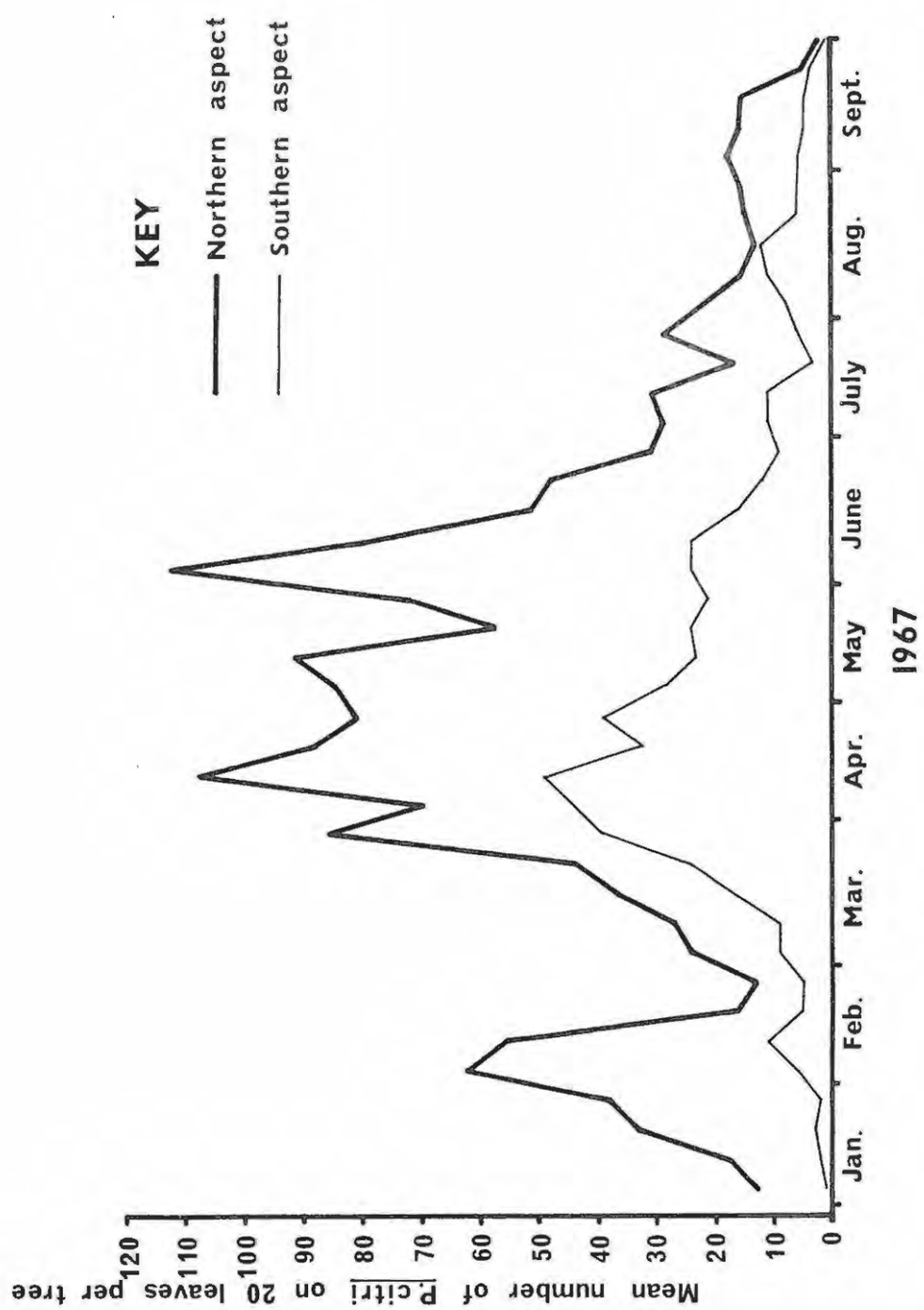


Figure 5.

The incidence of P.citri in twelve sampling stations throughout the Sundays River Valley, during March, April and July 1965.

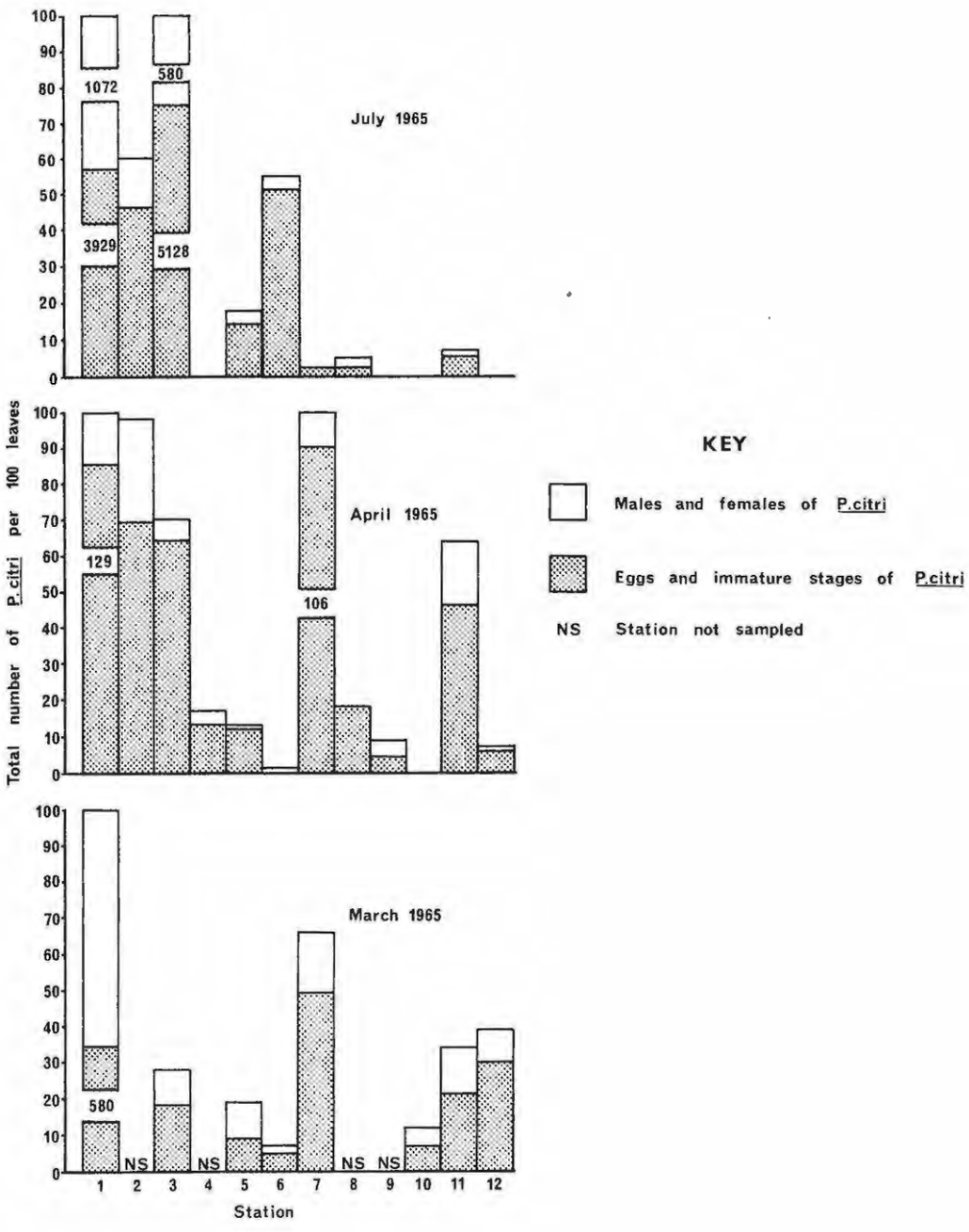


Figure 6.

The distribution of the 15 Washington Navel citrus trees, chosen at random, in the experimental orchard on the farm "Imiti", Addo.

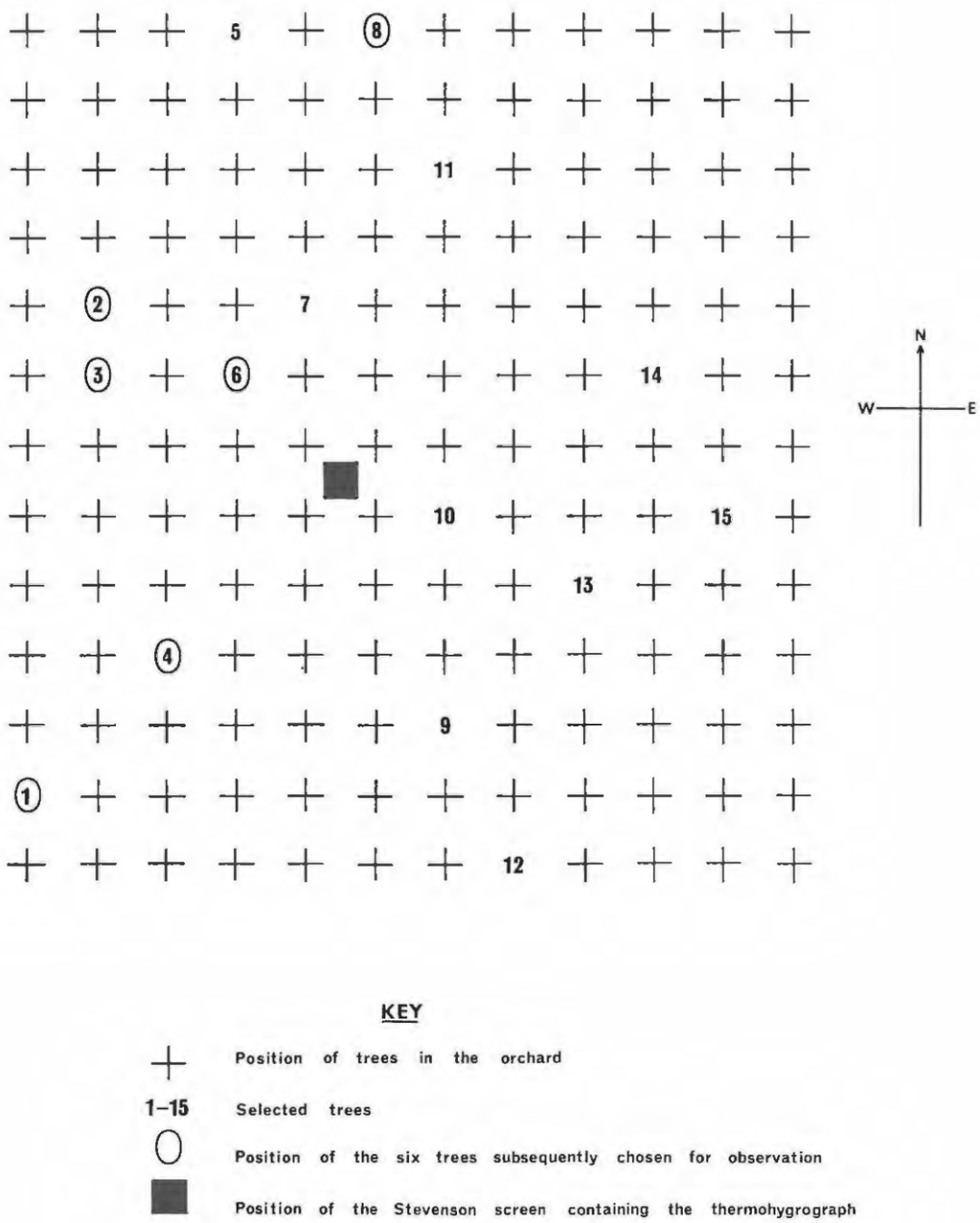


Figure 7.

The variation in the total number of P.citri, during the period March to August 1966, obtained by sampling either 15 or six experimental trees.

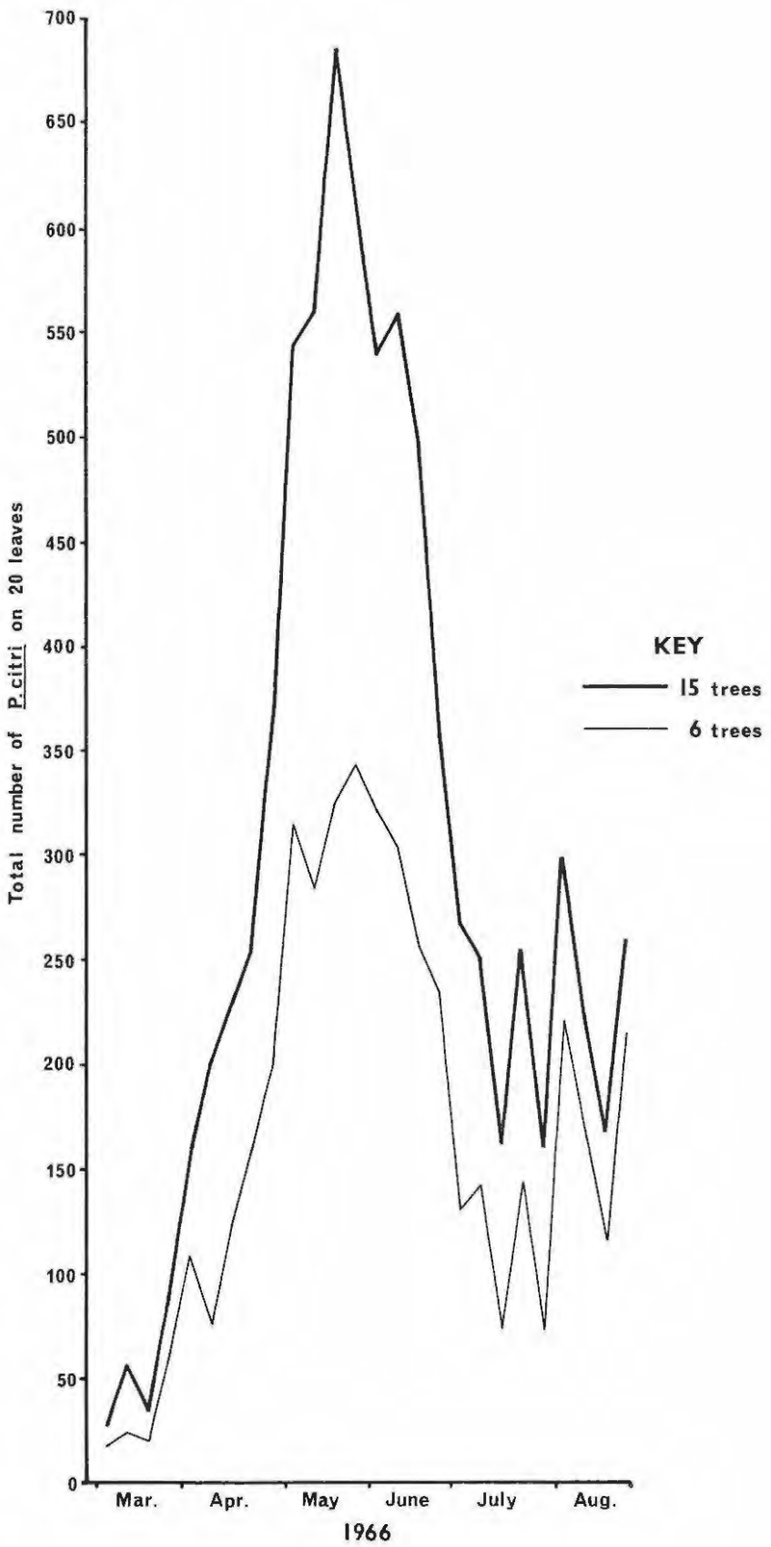


Figure 8.

The seasonal variation in the total number of P.citri on four of the six experimental trees in the natural control orchard at "Imiti", Addo.

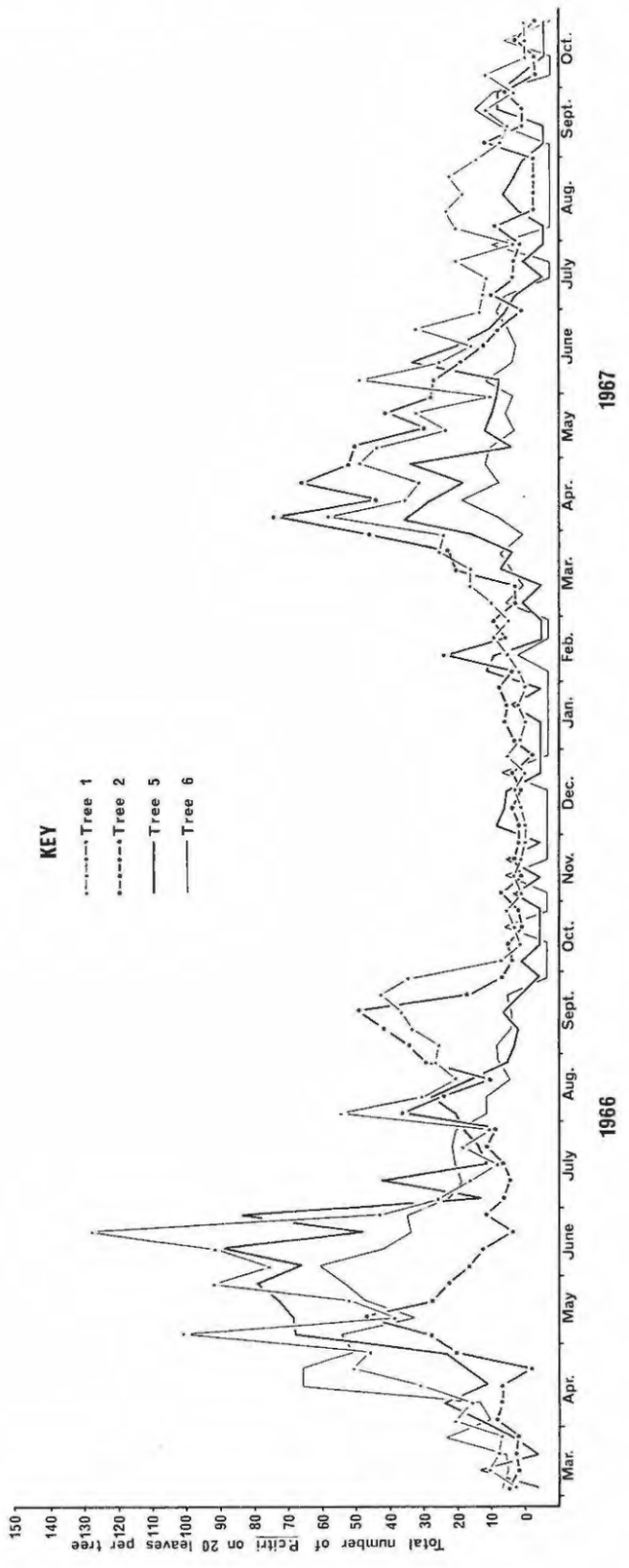


Figure 9.

The seasonal abundance of P.citri under natural control in a Washington Navel citrus orchard on the farm "Imiti", from March 1966 to October 1967, and the number of hours per week the temperature was greater than or equal to 18°C and relative humidity less than or equal to 30%.

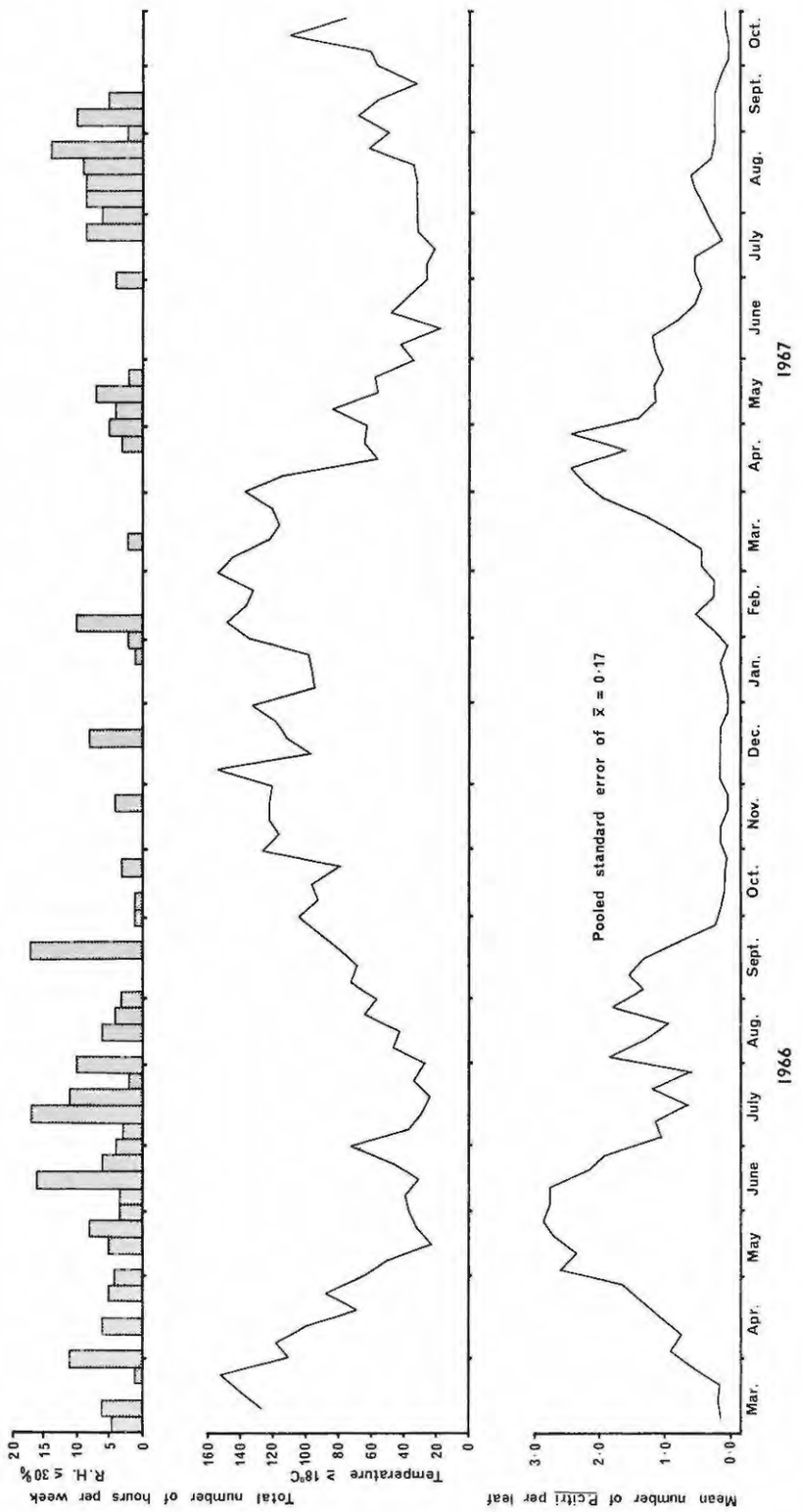


Figure 10.

The rearing unit used in laboratory experiments to investigate the development and life cycle of the citrus red mite.

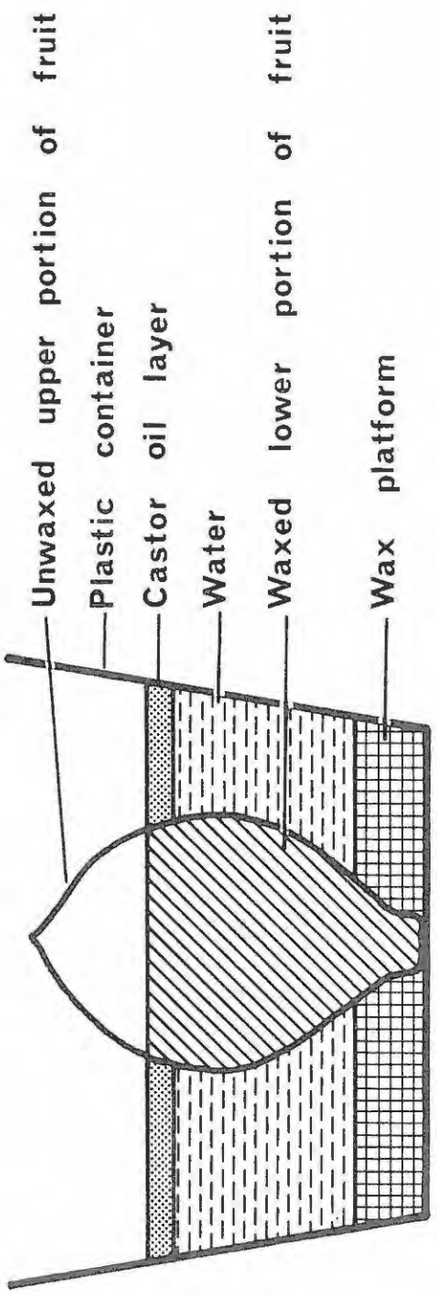


Figure 11.

The duration of the life cycle of the citrus red mite reared through one generation in the laboratory on a lemon fruit.

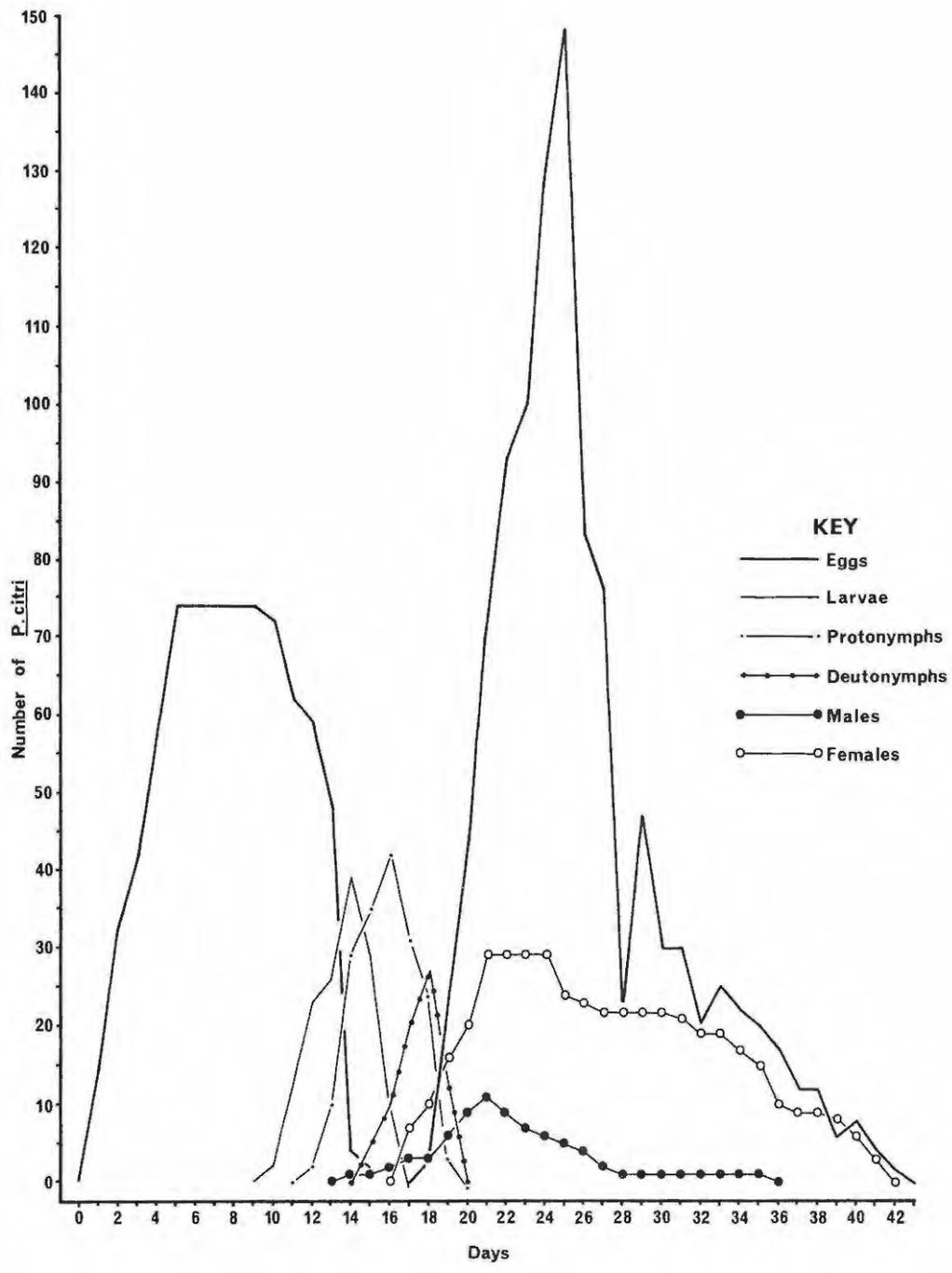


Figure 12.

The duration of the life cycle of the citrus red mite reared through one generation in the laboratory on a Valencia orange.

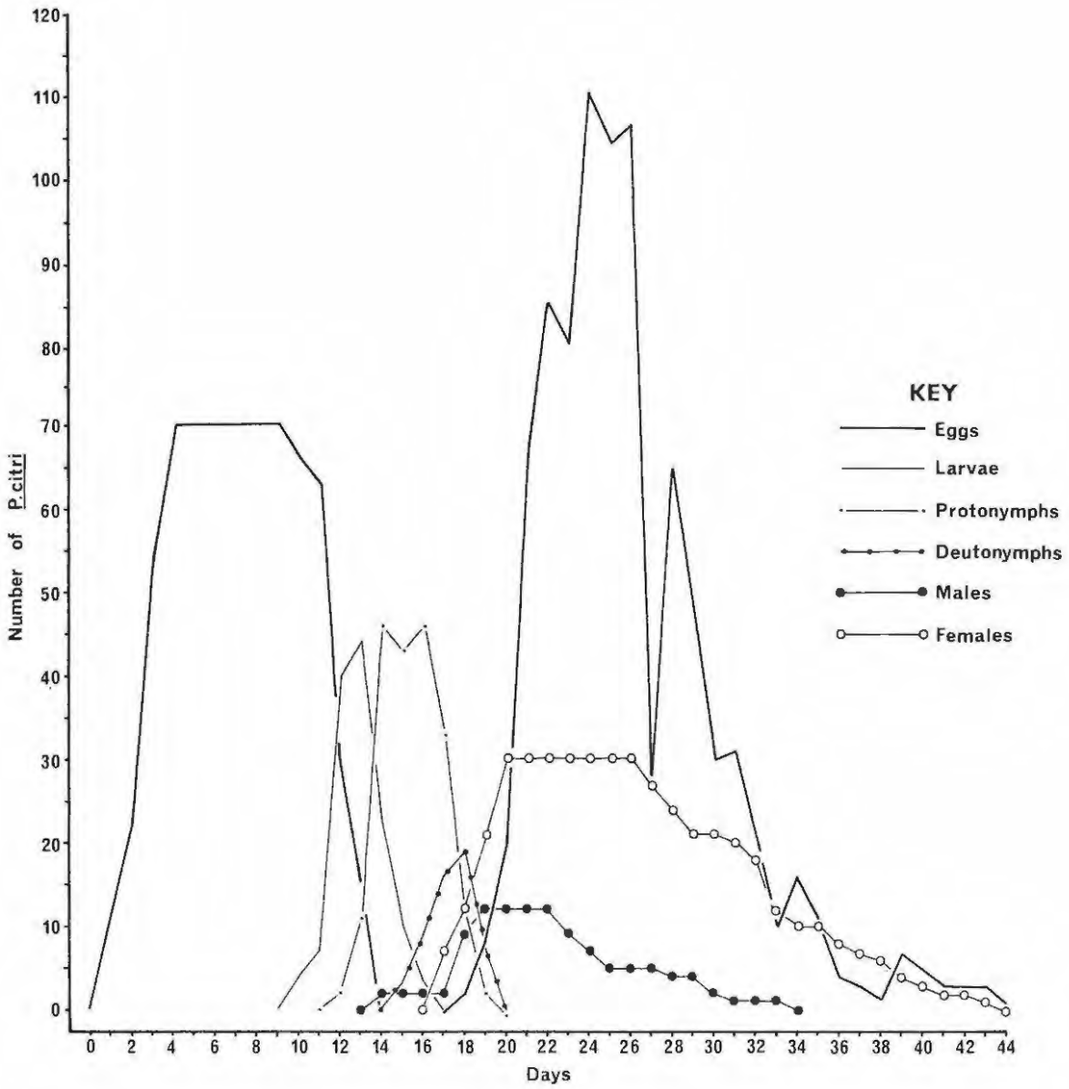


Figure 13.

The duration of the life cycle of the citrus red mite reared through one generation in the laboratory on Washington Navel leaf discs 1¾ inches in diameter.

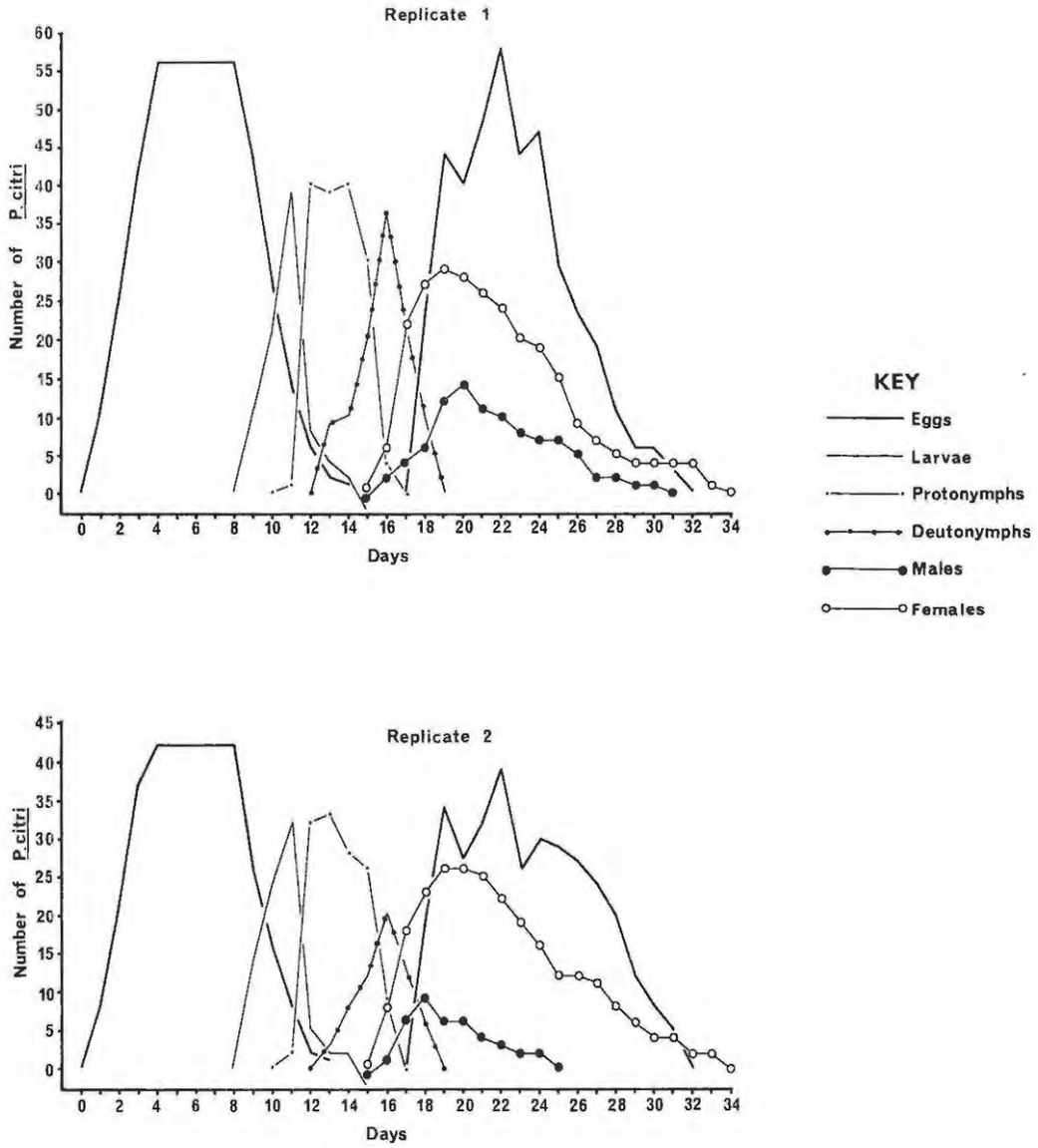


Figure 14.

The development of P.citri males from unfertilised eggs laid by virgin females.

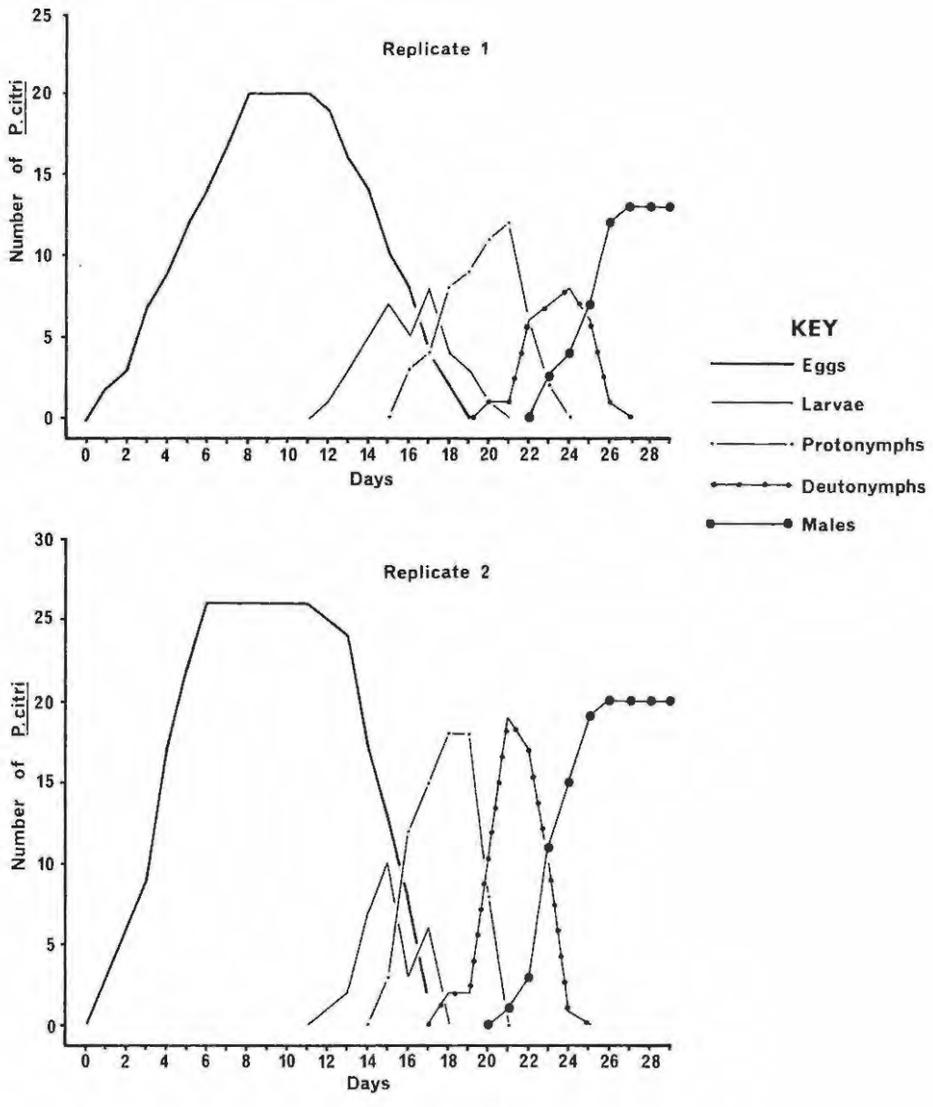


Figure 15.

The typical daily variation in field temperature and relative humidity (continuous line), and the temperature and relative humidity duplicated in the environment room (broken line) to simulate - A. Summer, B. Autumn, and C. Winter.

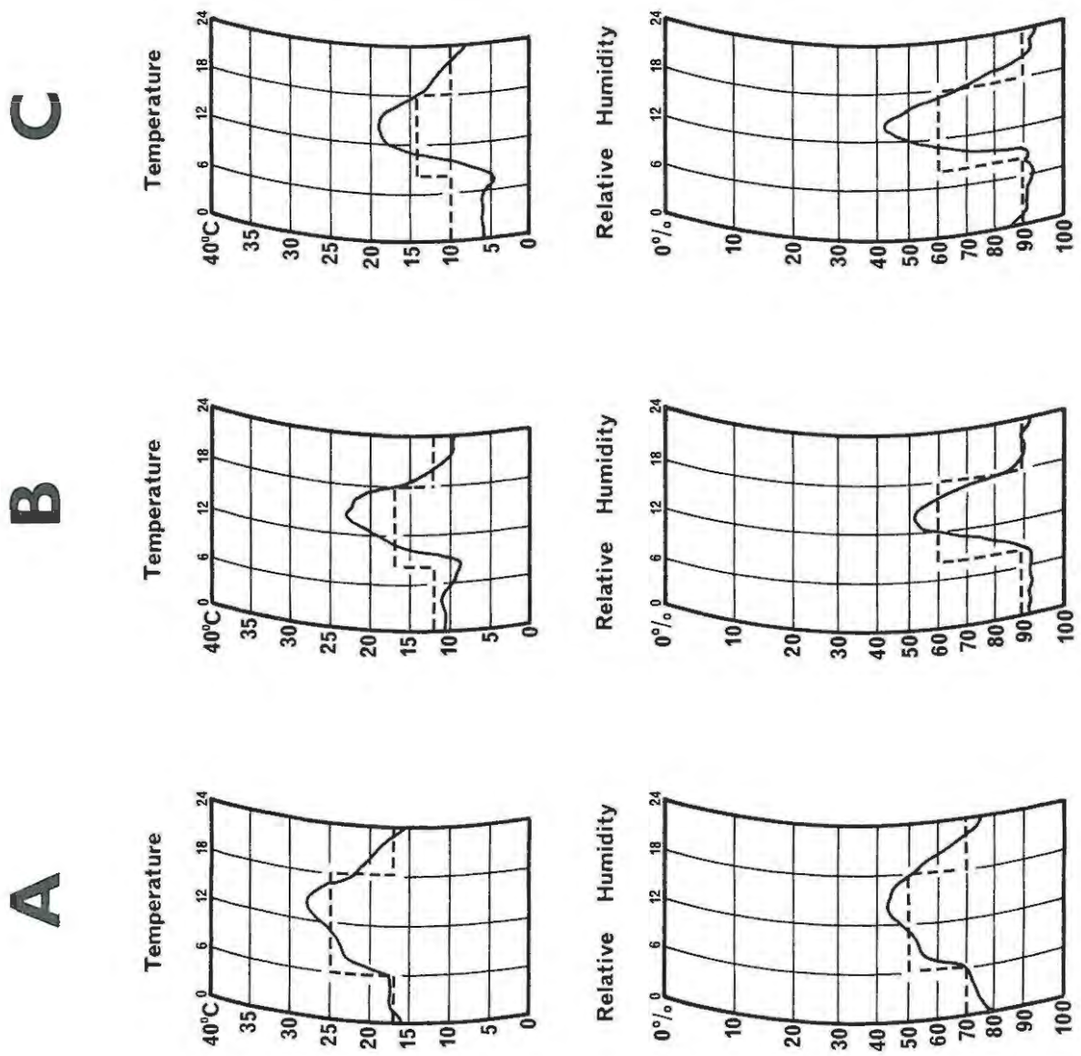


Figure 16.

The effect of simulated summer temperatures and relative humidities on the development and life cycle of the citrus red mite.

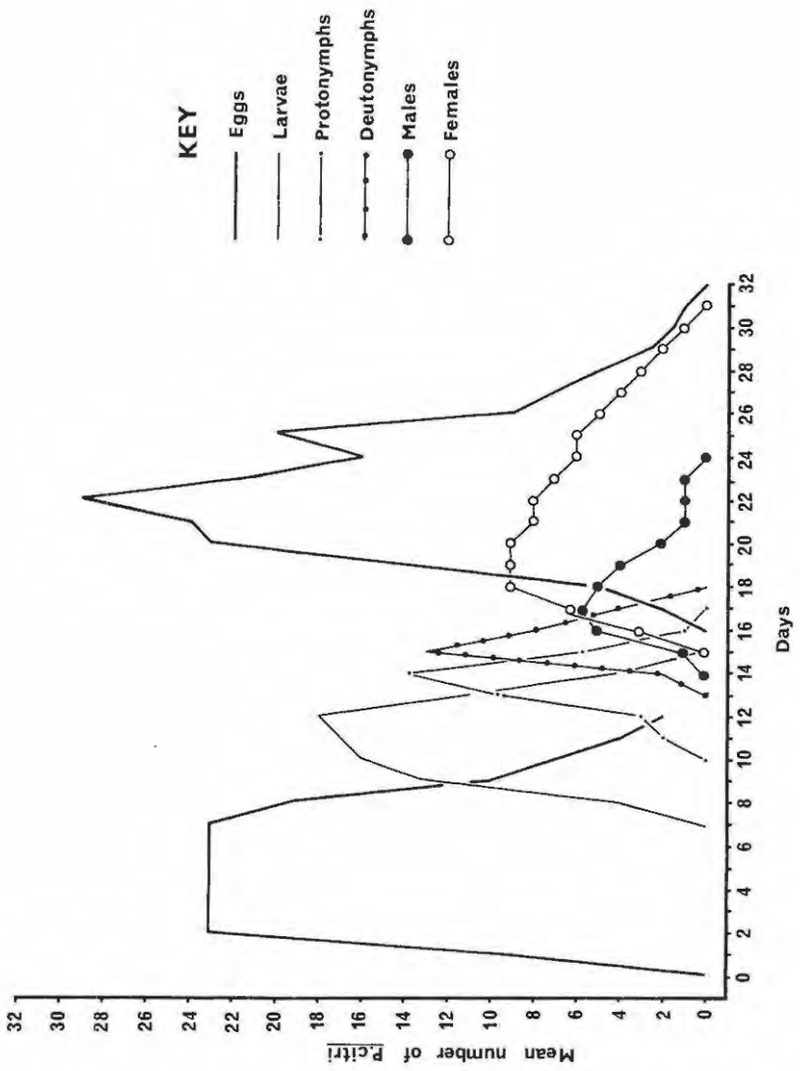


Figure 17.

The effect of simulated autumn temperatures and relative humidities on the development and life cycle of the citrus red mite.

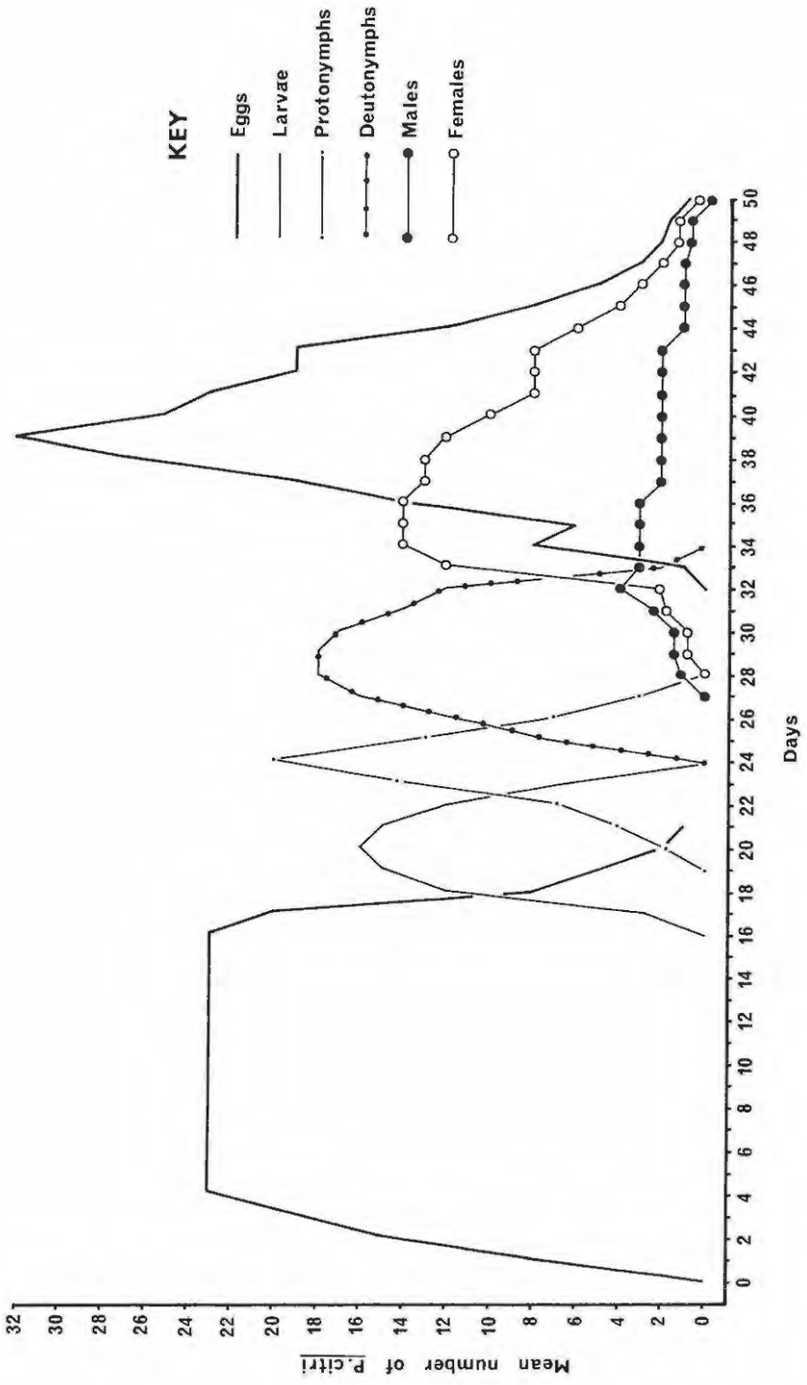


Figure 18.

The effect of simulated winter temperatures and relative humidities on the development and life cycle of the citrus red mite.

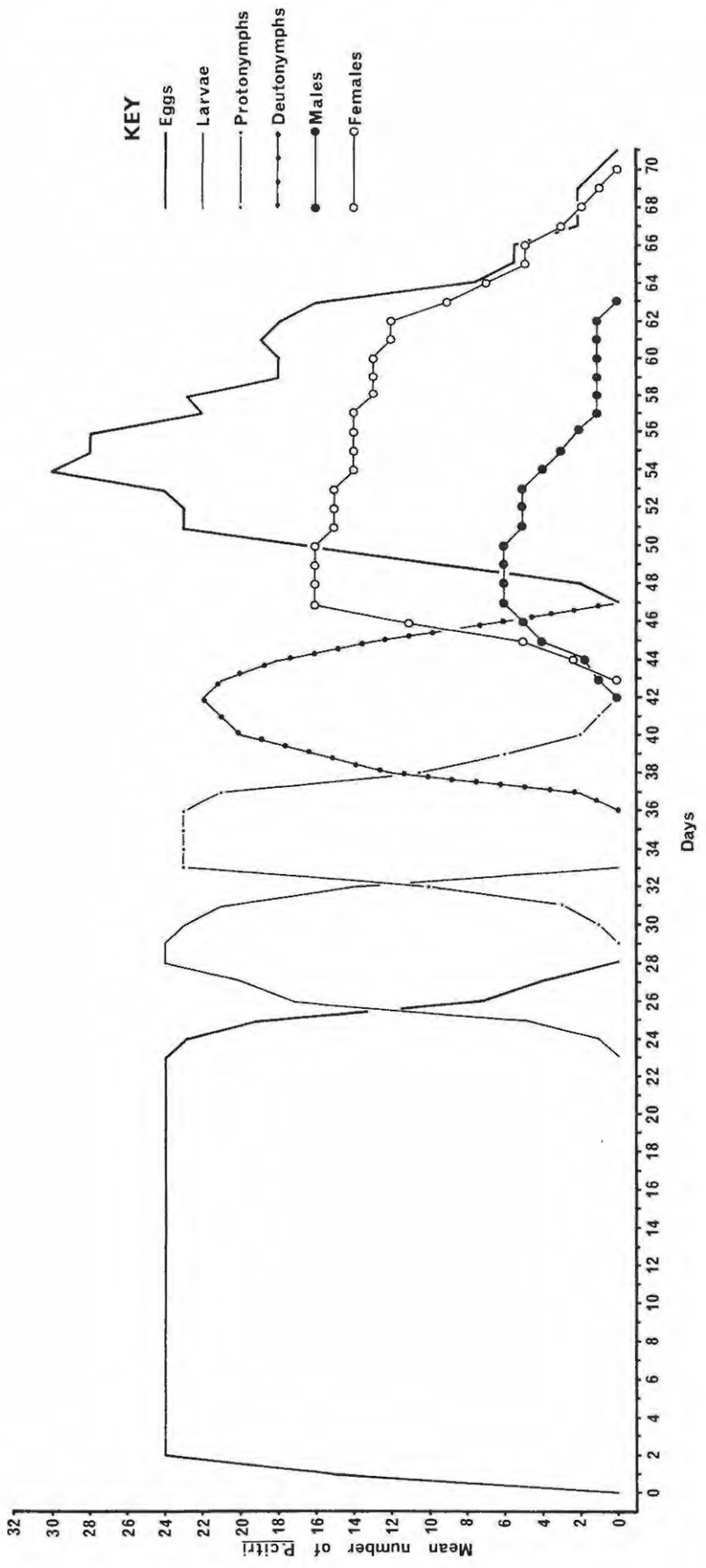


Figure 19.

The number of P.citri generations per year, based on the study of the effect of simulated seasonal variations of temperature and relative humidity on the development and life cycle of the citrus red mite.

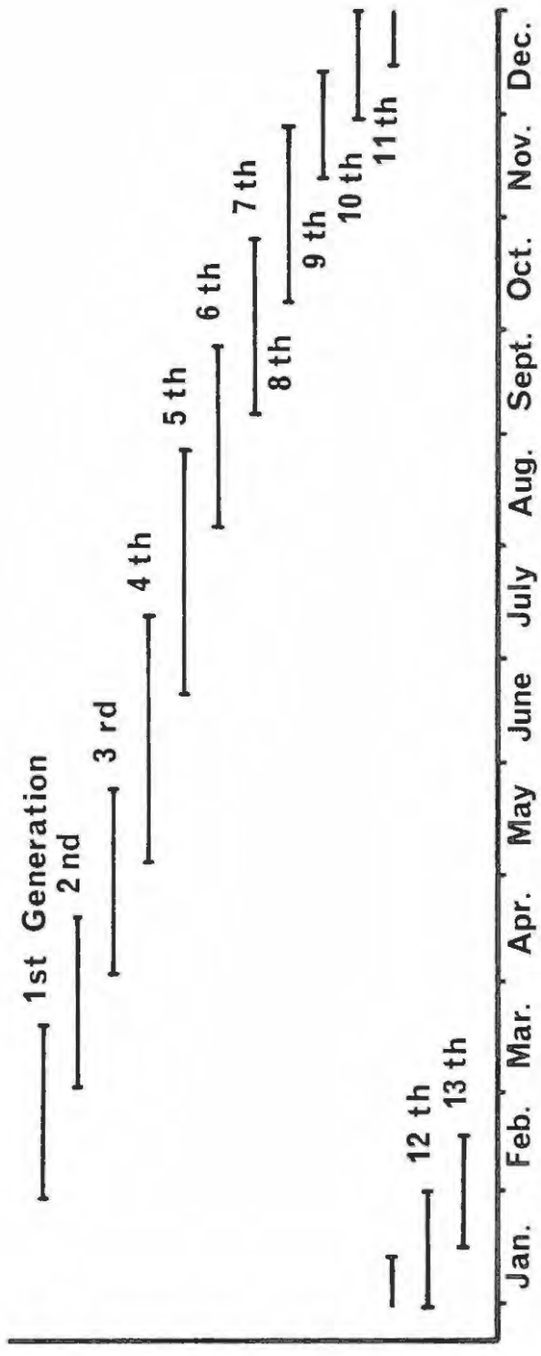


Figure 20.

The circuit of the resistance thermometer used to measure the difference between ambient temperature and the temperature of the leaf microclimate.

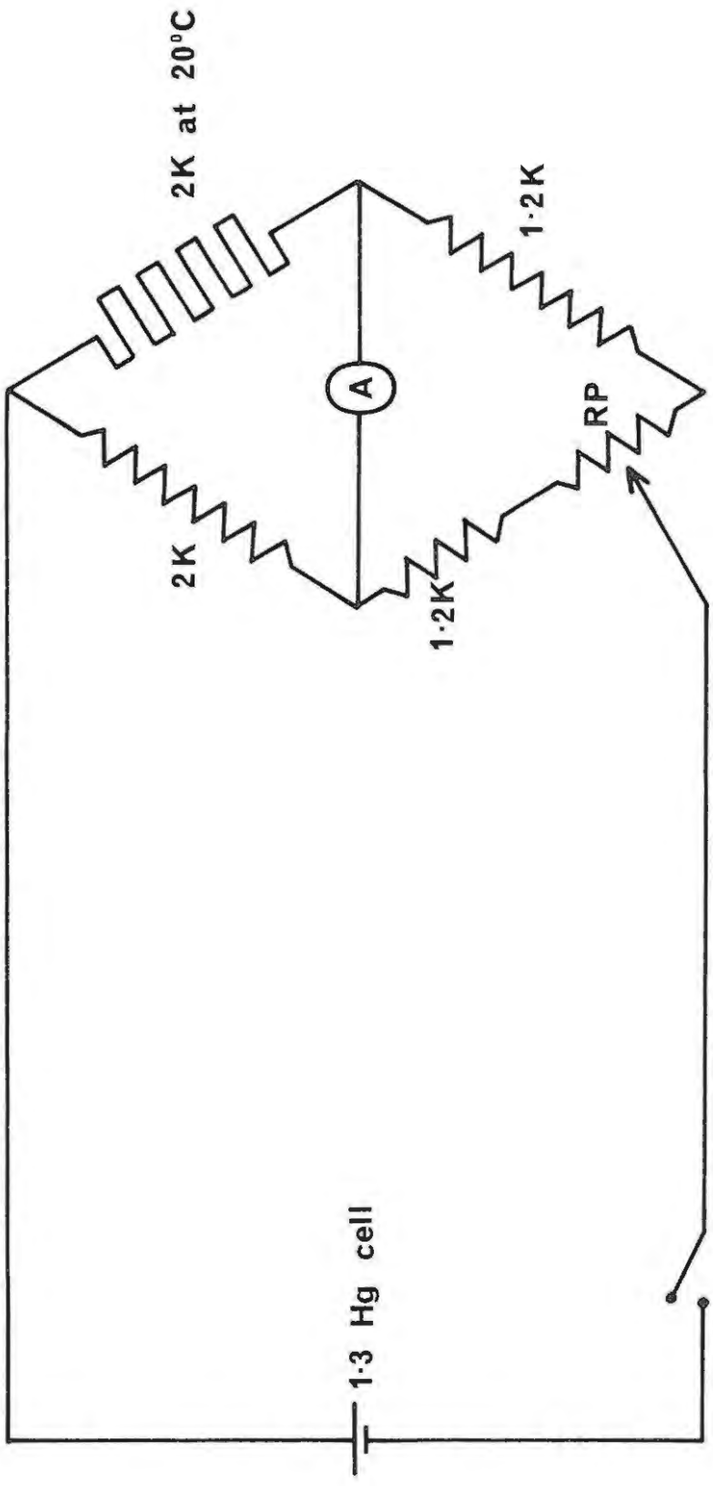


Figure 21.

The arrangement of the aluminium foil cylinder protecting the thermistor probes from the direct rays of the sun.

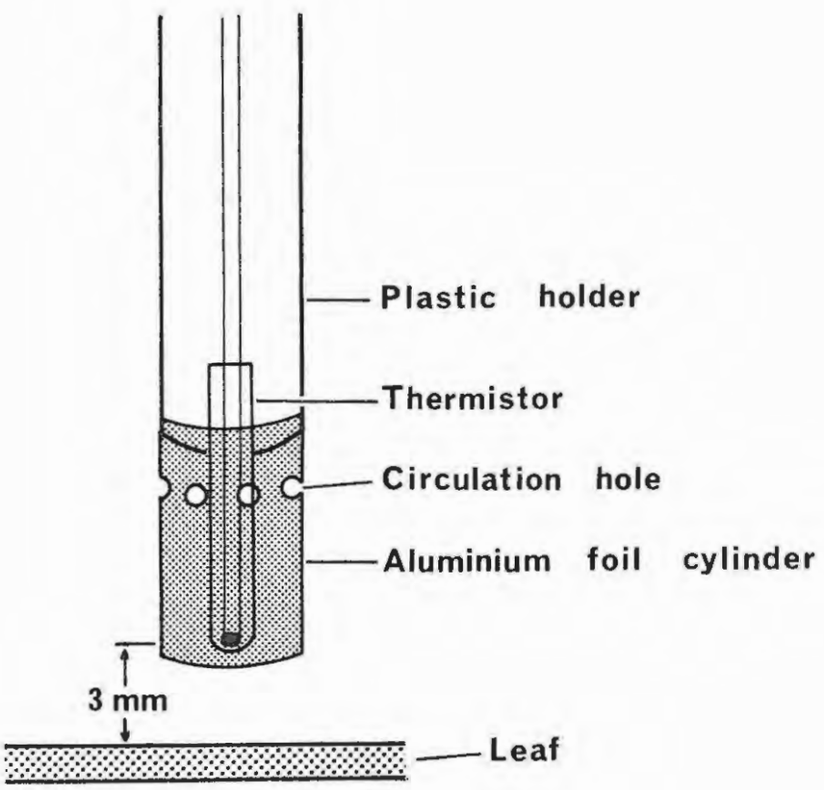


Figure 22.

The difference between ambient temperature and the temperature 3 millimeters above the surface of two leaves, one on the northern and the other on the southern aspect of a mature Washington Navel citrus tree in - A. Winter (2nd June 1966), B. Spring (24th September 1966), and C. Summer (19th January 1967).

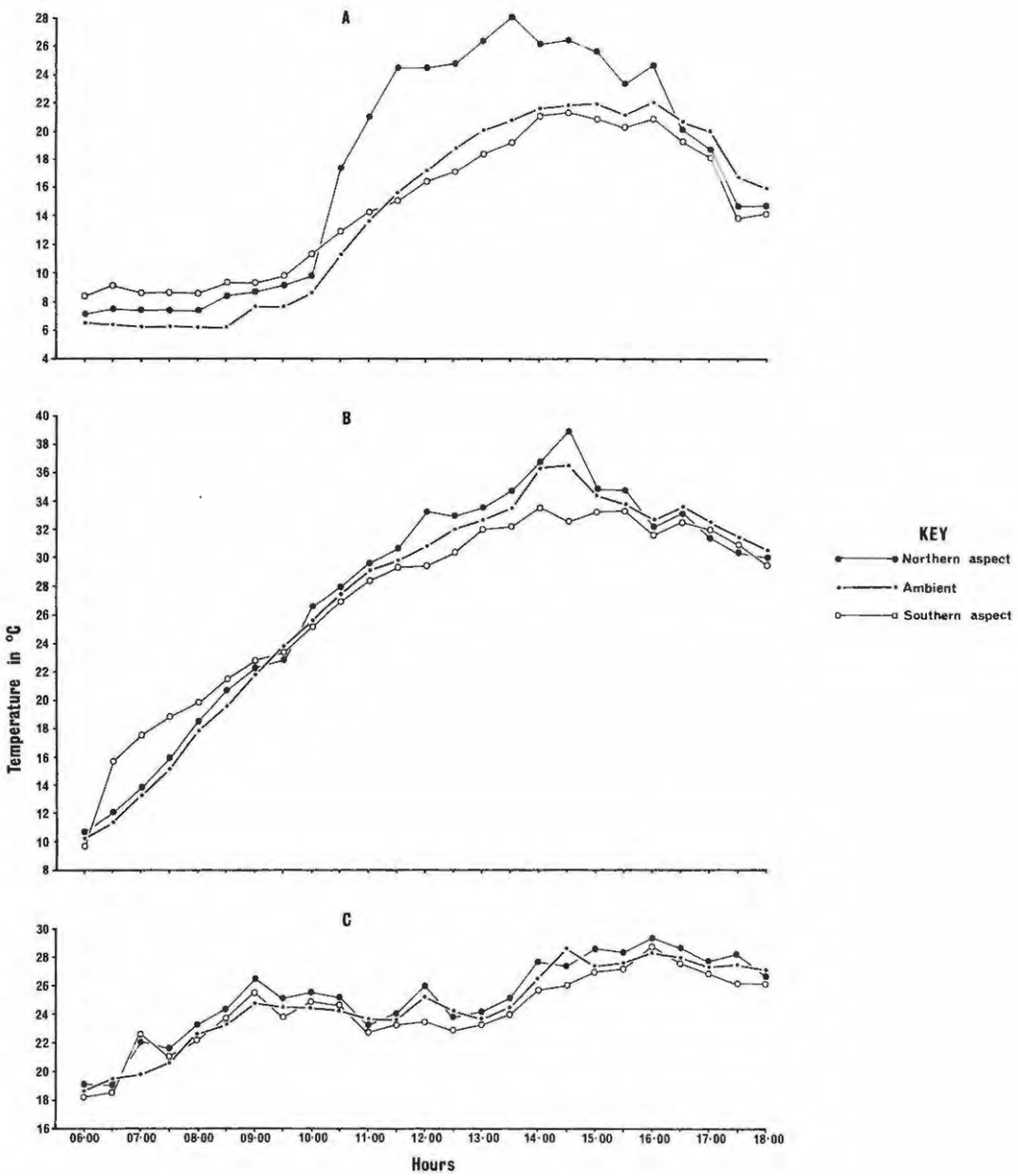


Figure 23.

The variation of temperature and relative humidity - A. recorded on a thermohygrograph in the orchard at "Imiti" from 18th to 23rd October 1966, and B. duplicated in the environment room.

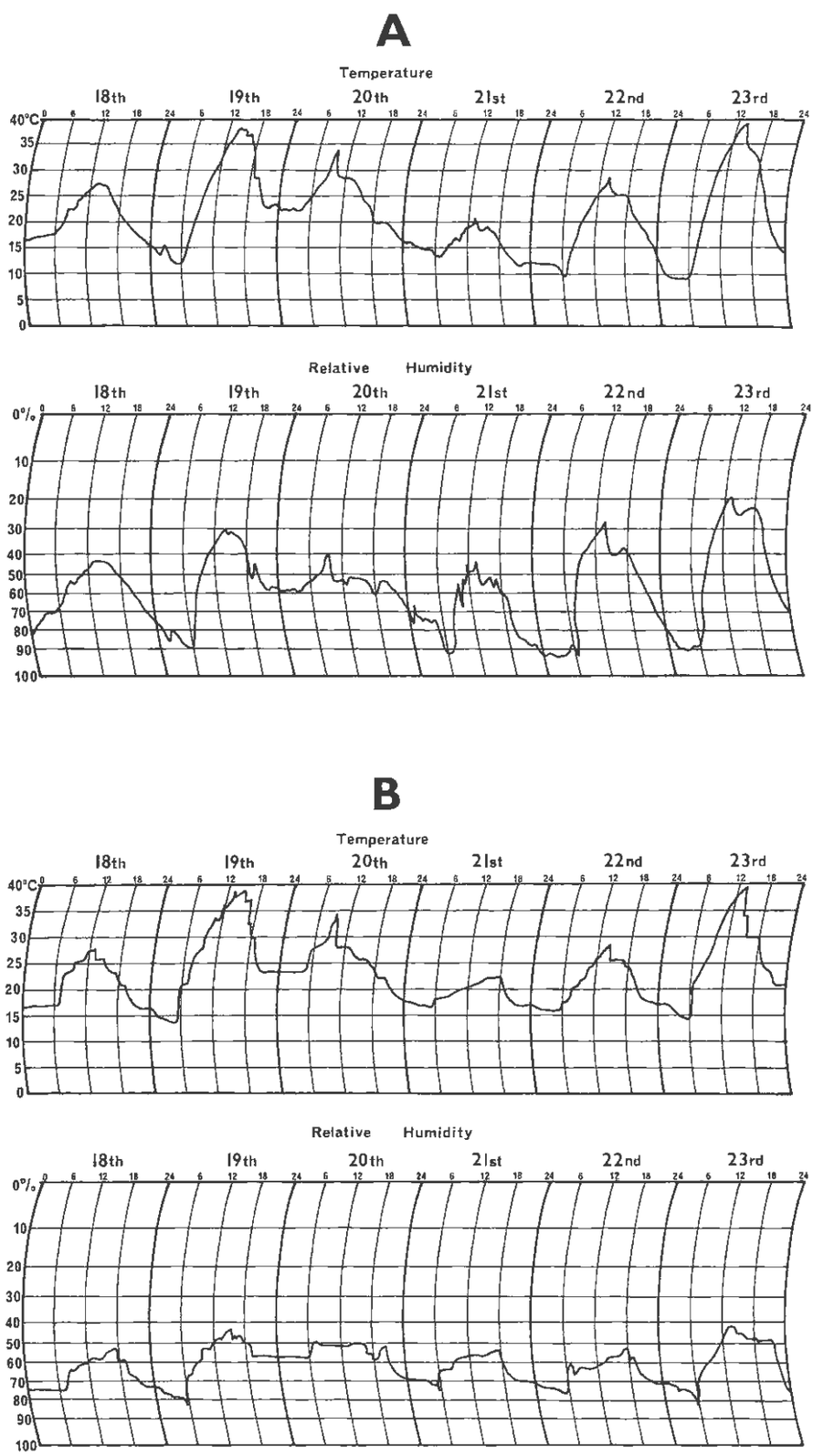


Figure 24.

The variation of temperature and relative humidity - A. recorded in the field at Addo on 5th February 1968, and B. duplicated in the environment room.

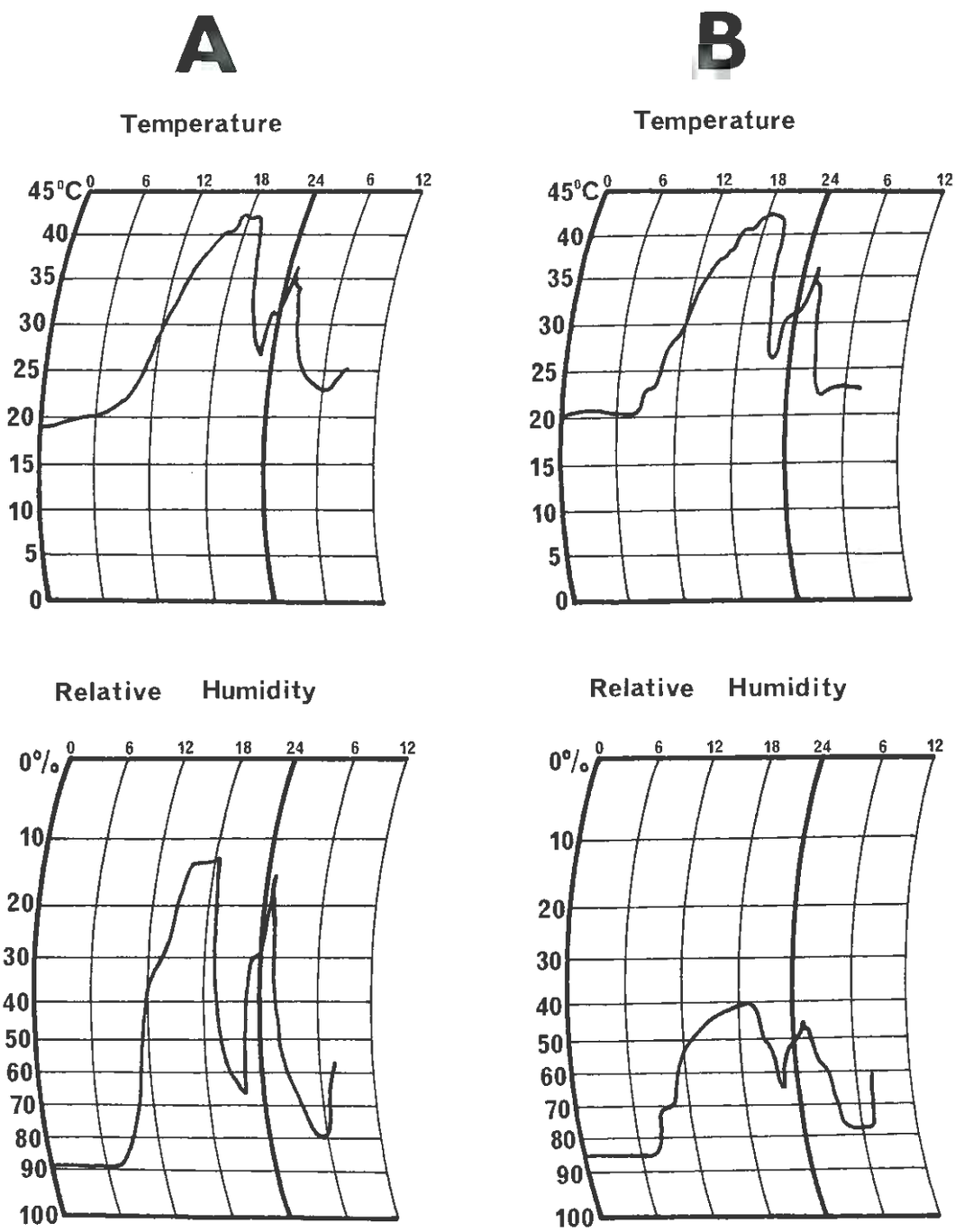


Figure 25.

The mean population density of P.citri per leaf on the six experimental trees at "Imiti", from March 1966 to October 1967, and the number of days per week the temperature was less than or equal to 5°C, greater than or equal to 35°C, and greater than or equal to 40°C, and the relative humidity less than or equal to 25%.

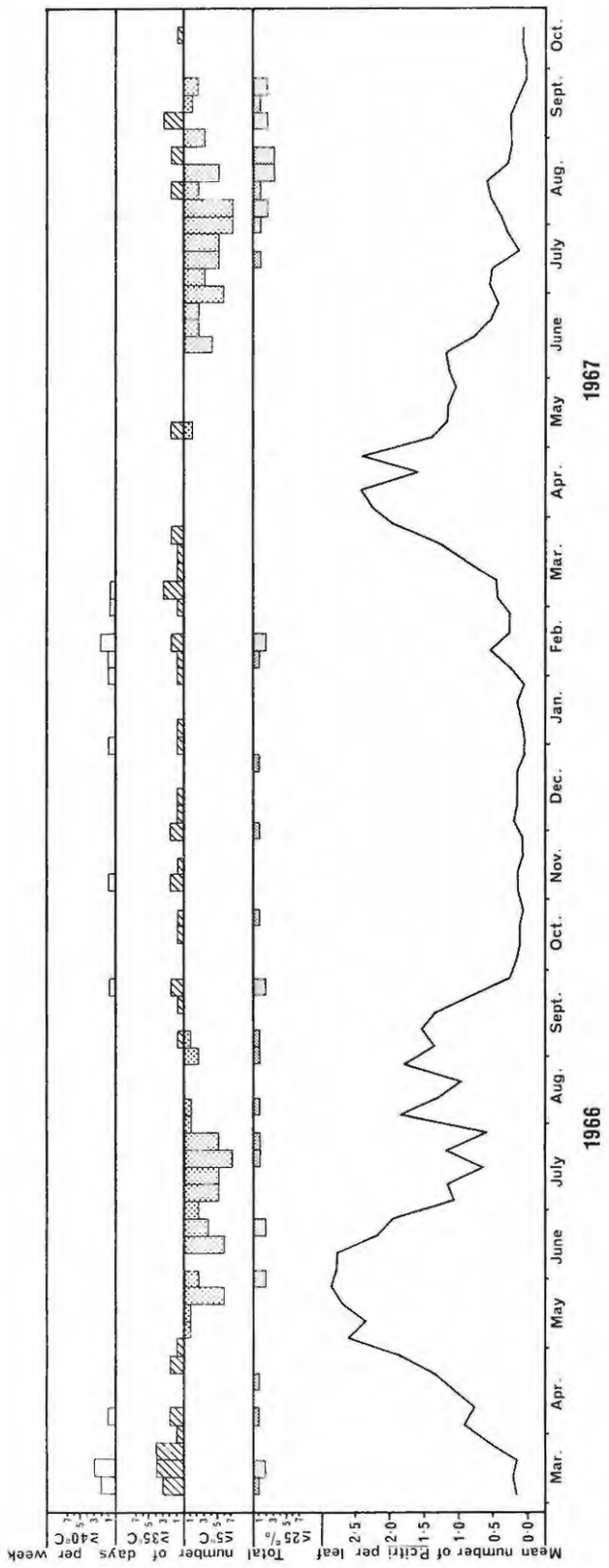


Figure 26.

The seasonal abundance of P.citri at Zebediela, from August 1962 to July 1963, according to van Rooyen (1966), and the number of days per week the temperature was less than or equal to 5°C and greater than or equal to 35°C, and relative humidity less than or equal to 25%.

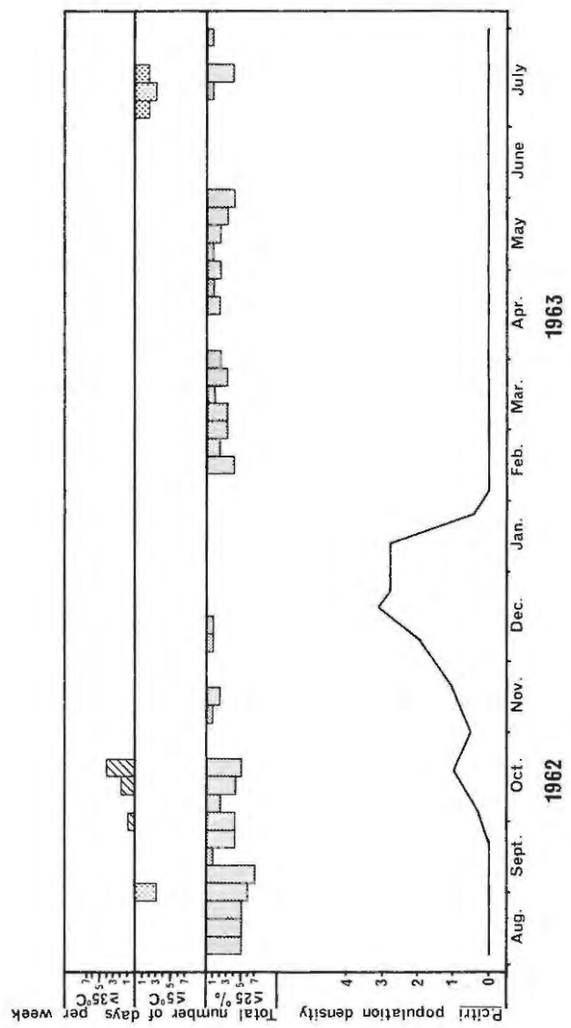


Figure 27.

The seasonal variation in the total number of P.citri on four of the six replicate trees which constituted the unsprayed control treatment in the insecticidal trial at "Littlecote", Sunland.

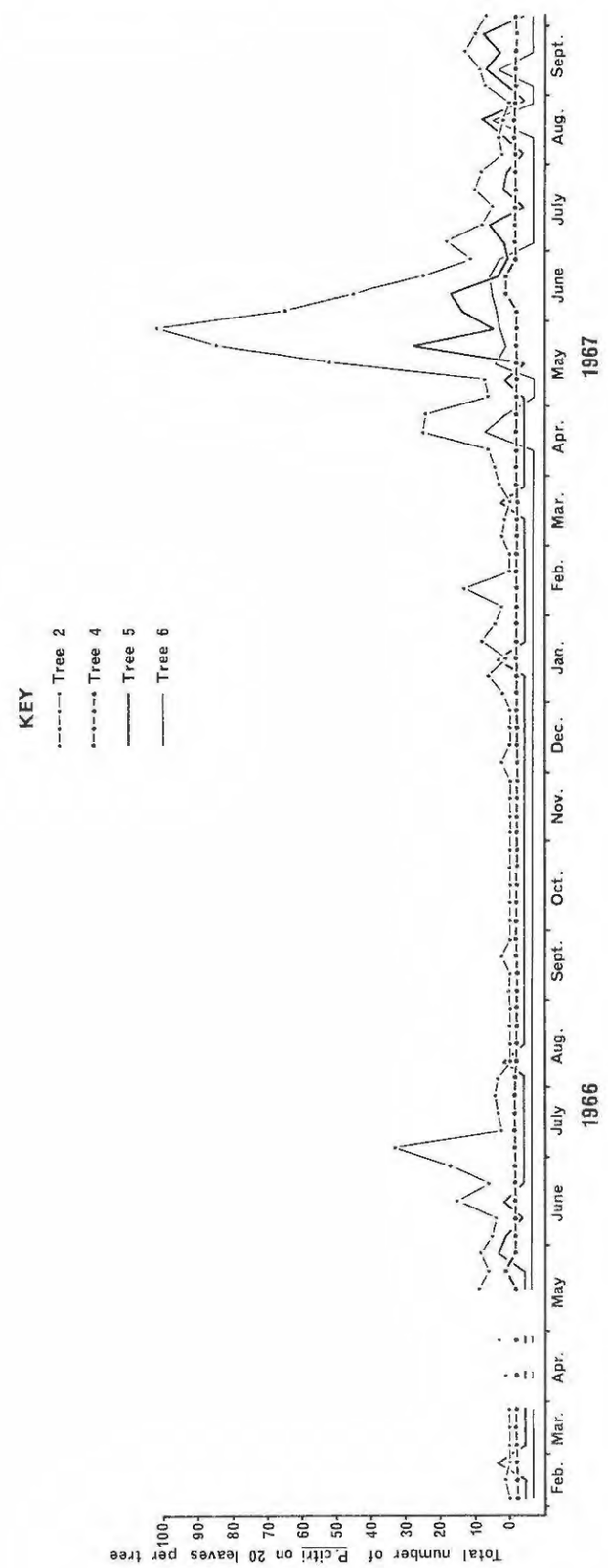


Figure 28.

The seasonal variation in the total number of P.citri on four of the six replicate trees in the insecticidal trial at "Littlecote", Sunland, which has been sprayed (S) with 0.05% Parathion + 0.025% Gusathion + 0.2% spray oil in October 1964, 1965 and 1966.

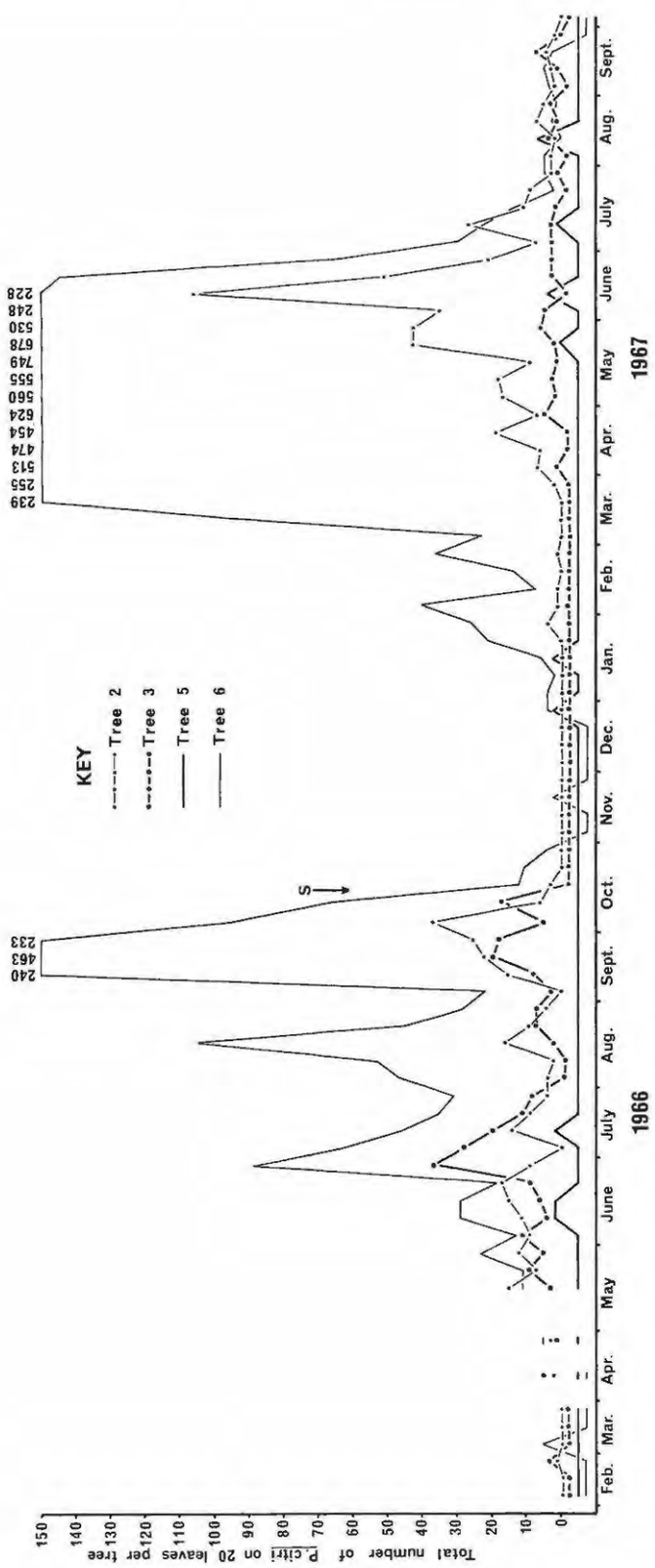


Figure 29.

The mean population density of female P.citri and A.addoensis per leaf in the sleeve cages at "Imiti". Sleeve 1 - control sleeve, Sleeve 2 - P.citri only, Sleeve 3 - P.citri and A.addoensis, and Sleeve 4 - P.citri and A.addoensis.

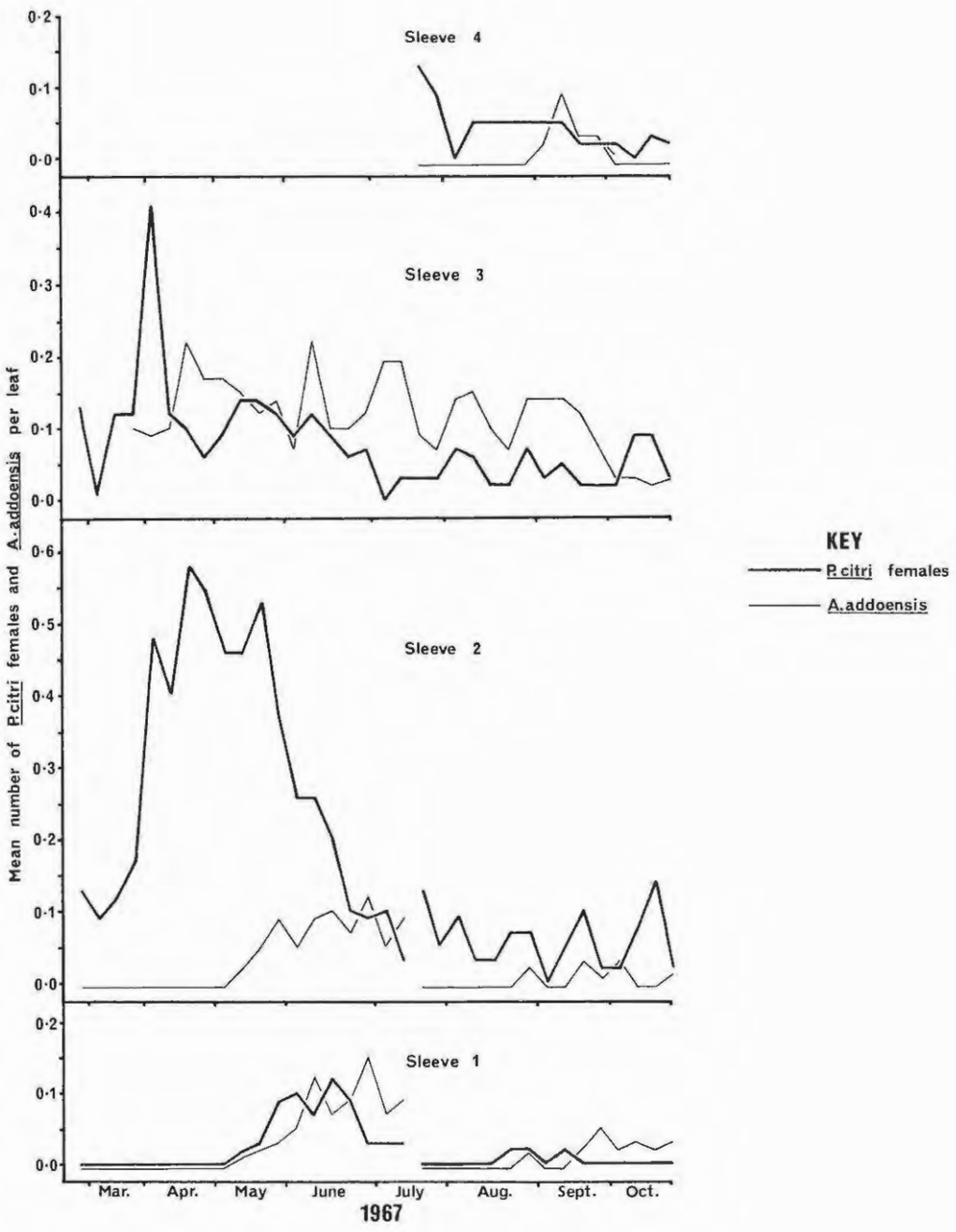


Figure 30.

The mean number of P.citri active stages and A.addoensis per leaf on the six experimental trees in the Washington Navel orchard at "Imiti".

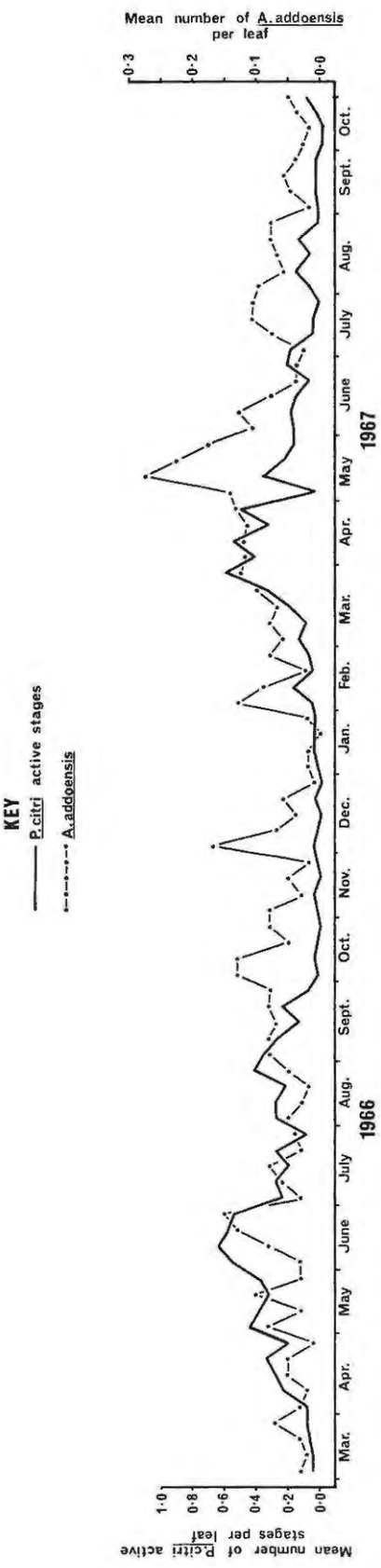
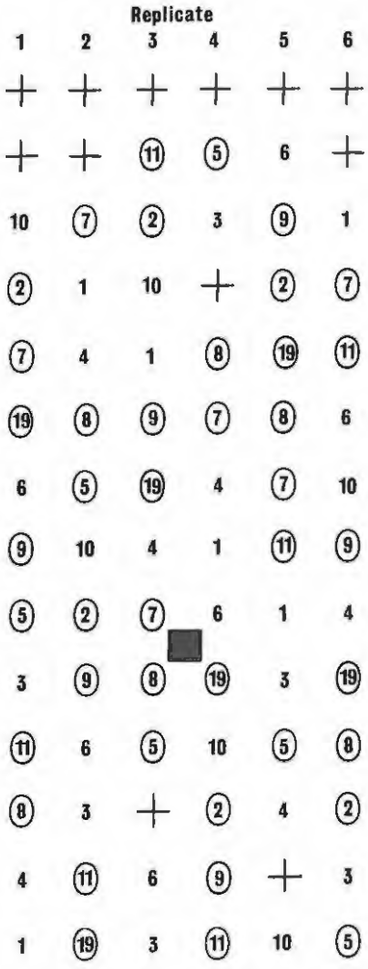


Figure 31.

The lay-out of the various insecticidal treatments in the experimental trial on the farm "Ruimte", Sunland, during 1964 and 1967, for the control of red scale and to observe the effect on P.citri.



KEY

+ Position of trees not included in trial

■ Position of the Stevenson screen containing the thermohygrograph

1-19 Position of the individual trees within each treatment. The treatments circled were those studied.

2 Parathion and Alboleum in October

5 Parathion and Alboleum in March

7 Trithion and Alboleum in March

8 Parathion, Rogor and Alboleum in March

9 Parathion and Alboleum in August and October

11 Parathion and Alboleum in October and March

19 Control treatment. No insecticidal spray.

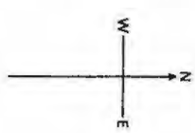


Figure 32.

The lay-out of the various insecticidal treatments in the experimental trial on the farm "Littlecote", Sunland, during 1964 and 1967, for the control of red scale and to observe the effect on P.citri.

Replicate					
1	2	3	4	5	6
13	12	2	15	6	13
(19)	15	(17)	11	9	8
6	8	12	(19)	18	16
18	13	15	10	(17)	6
14	10	8	14	12	(19)
16	9	11	16	2	10
10	18	(19)	6	15	9
15	16	9	18	8	14
9	14	13	(17)	11	(17)
2	(17)	6	2	13	12
8	11	16	9	14	15
(17)	(19)	10	12	16	11
11	2	18	8	(19)	18
12	6	14	13	10	2

KEY

1-19	Position of the individual trees within each treatment. The treatments circled were those studied
17	Parathion, Gusathion and Alboleum in October
19	Control treatment. No insecticidal spray.

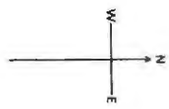


Figure 33.

The seasonal abundance of P.citri on the six untreated control trees in the insecticidal trial at "Ruimte", from February 1966 to October 1967, and the number of hours per week the temperature was greater than or equal to 18°C and relative humidity less than or equal to 30%.

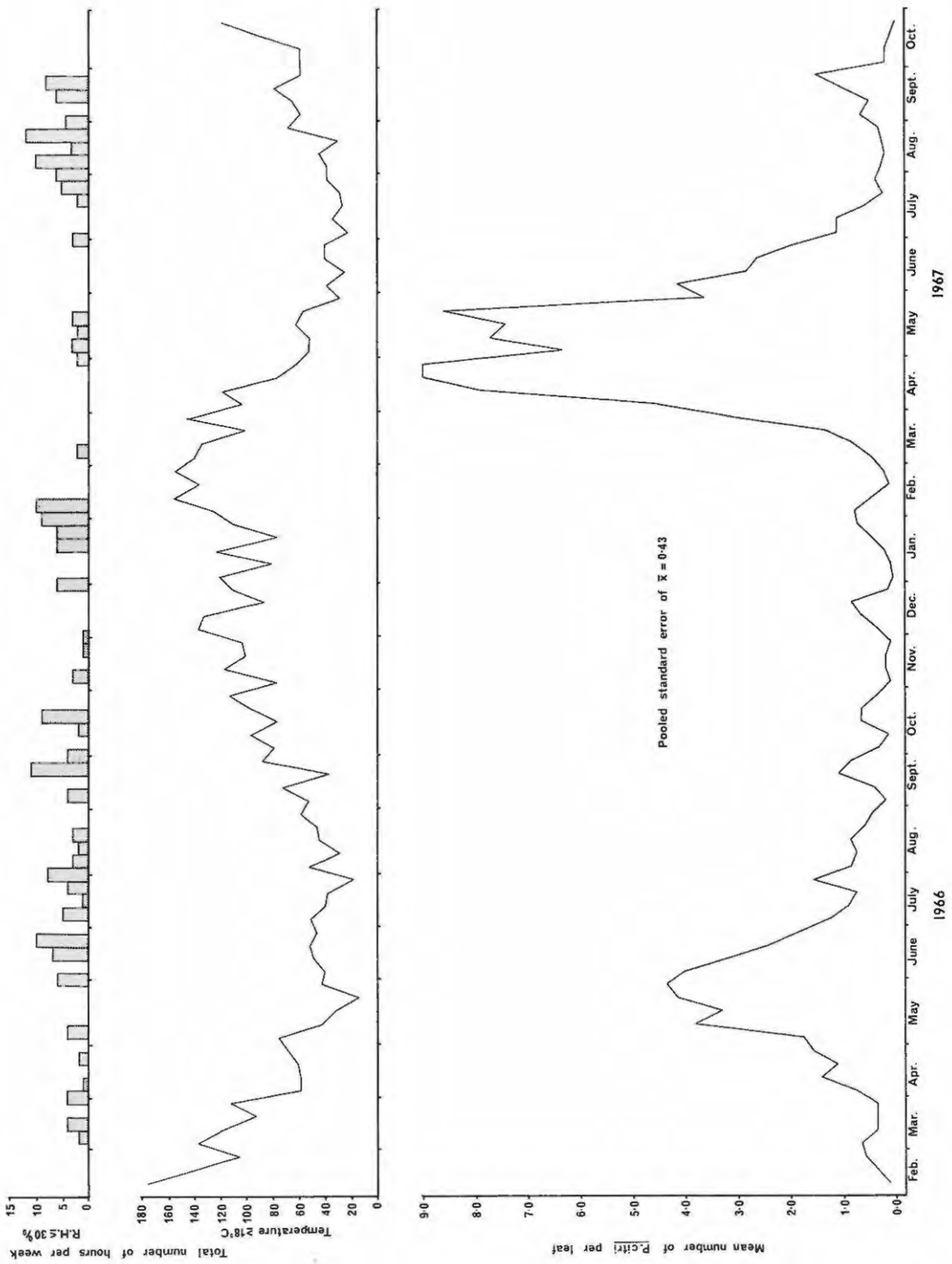


Figure 34.

The variation in the mean number of P.citri per leaf on four of the six replicate trees in the untreated control treatment at "Ruimte", during February 1966 and October 1967.

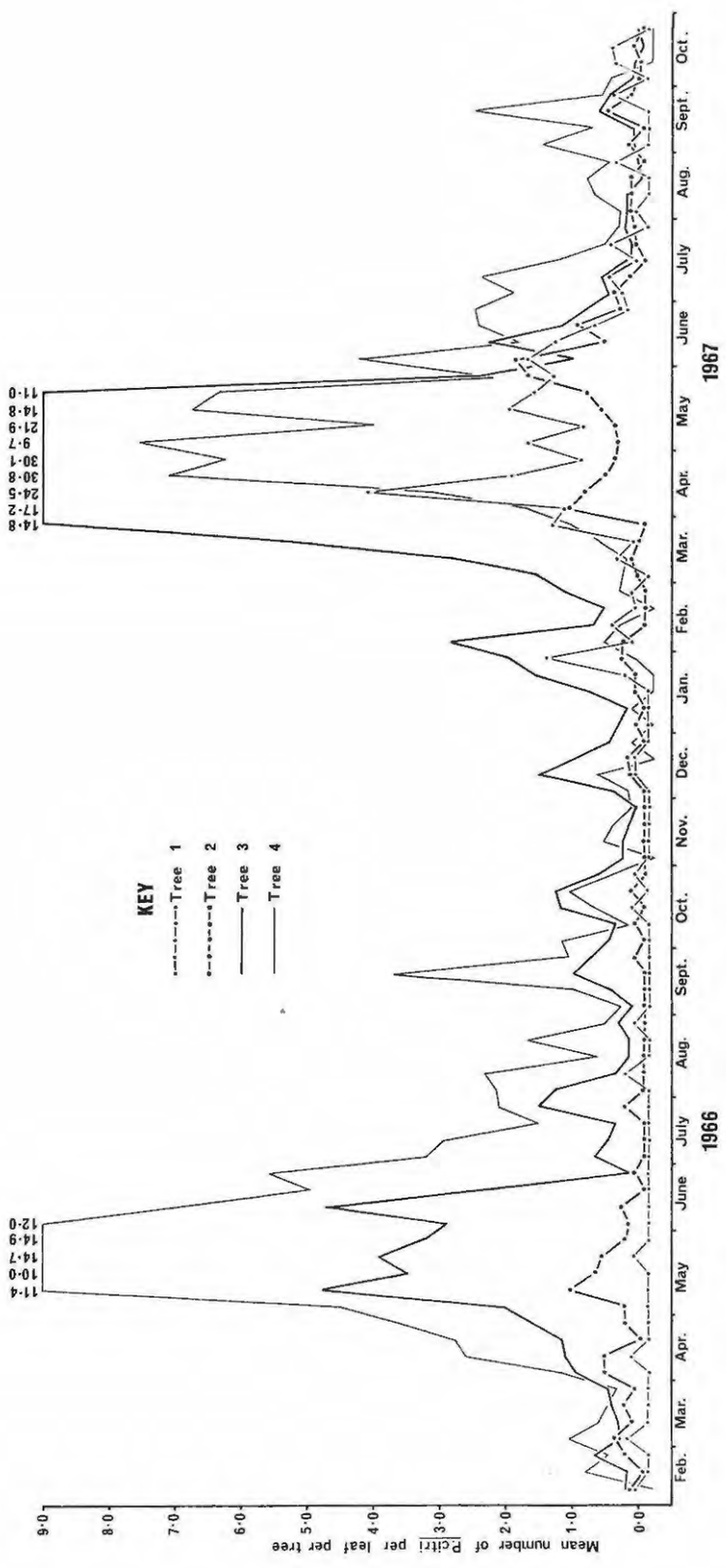


Figure 35.

The variation in the mean number of A.addoensis and P.citri active stages per leaf on the six untreated control trees in the insecticidal trial at "Ruimte" between February 1966 and October 1967.

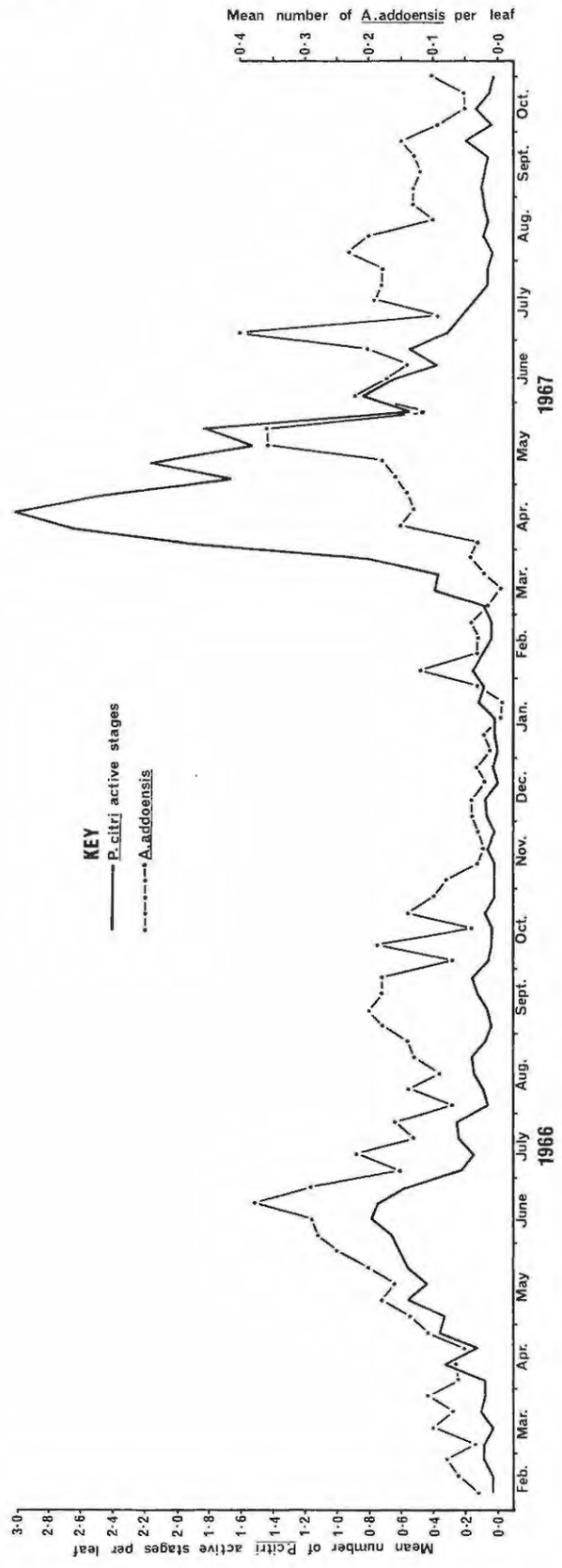


Figure 36.

The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to October 1967, on the six replicate trees in the insecticidal trial at "Ruimte" which had been sprayed (S) with 0.075% Parathion + 0.2% Alboleum in October 1964, 1965 and 1966.

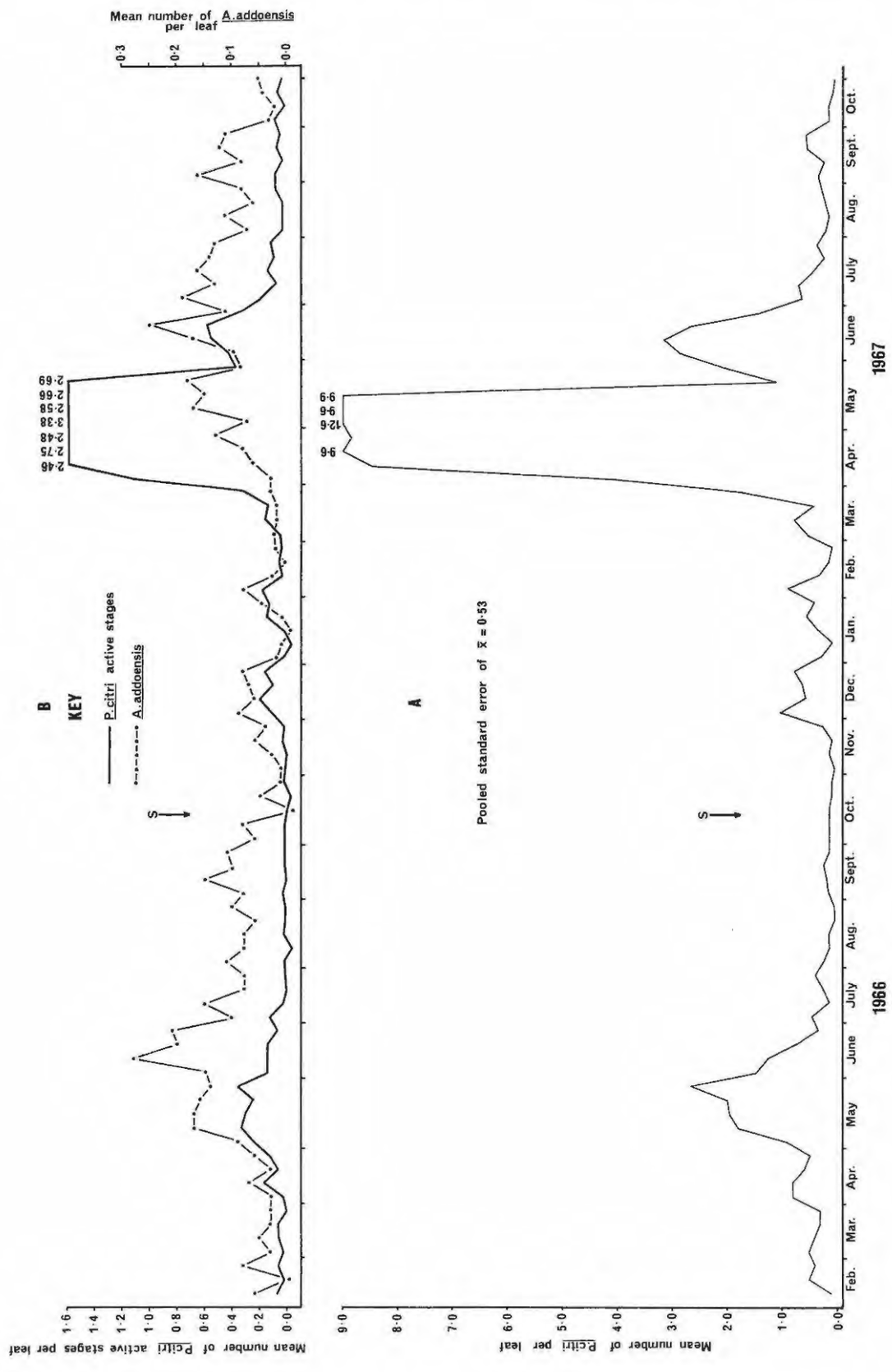


Figure 37.

The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to October 1967, on the six replicate trees in the insecticidal trial at "Ruimte" which had been sprayed (S) with 0.075% Parathion + 0.2% Alboleum in March 1965, 1966 and 1967.

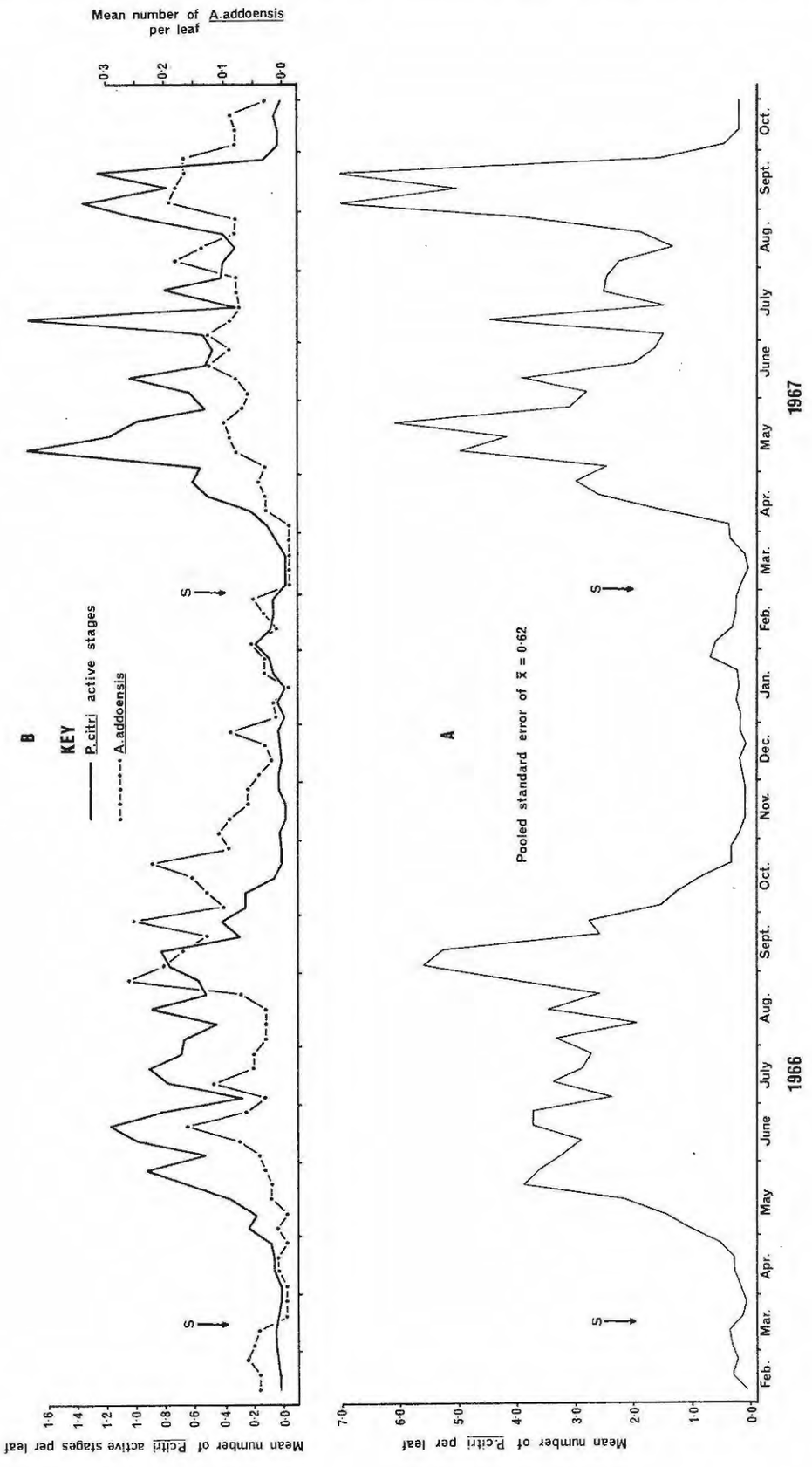
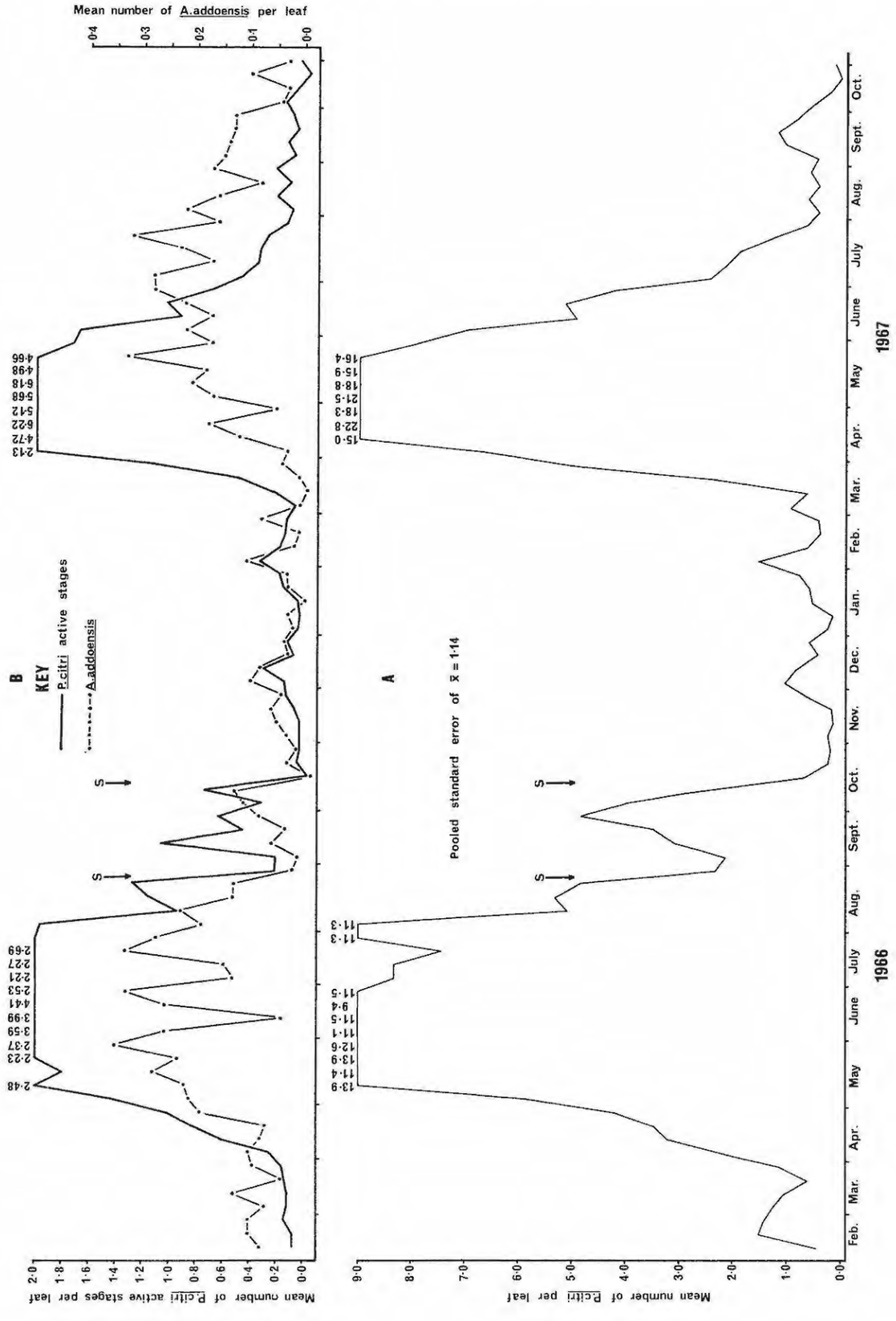


Figure 38.

The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to October 1967, on the six replicate trees in the insecticidal trial at "Ruimte" which had been sprayed (S) with 0.075% Parathion + 0.2% Alboleum in August and October 1964, 1965 and 1966.



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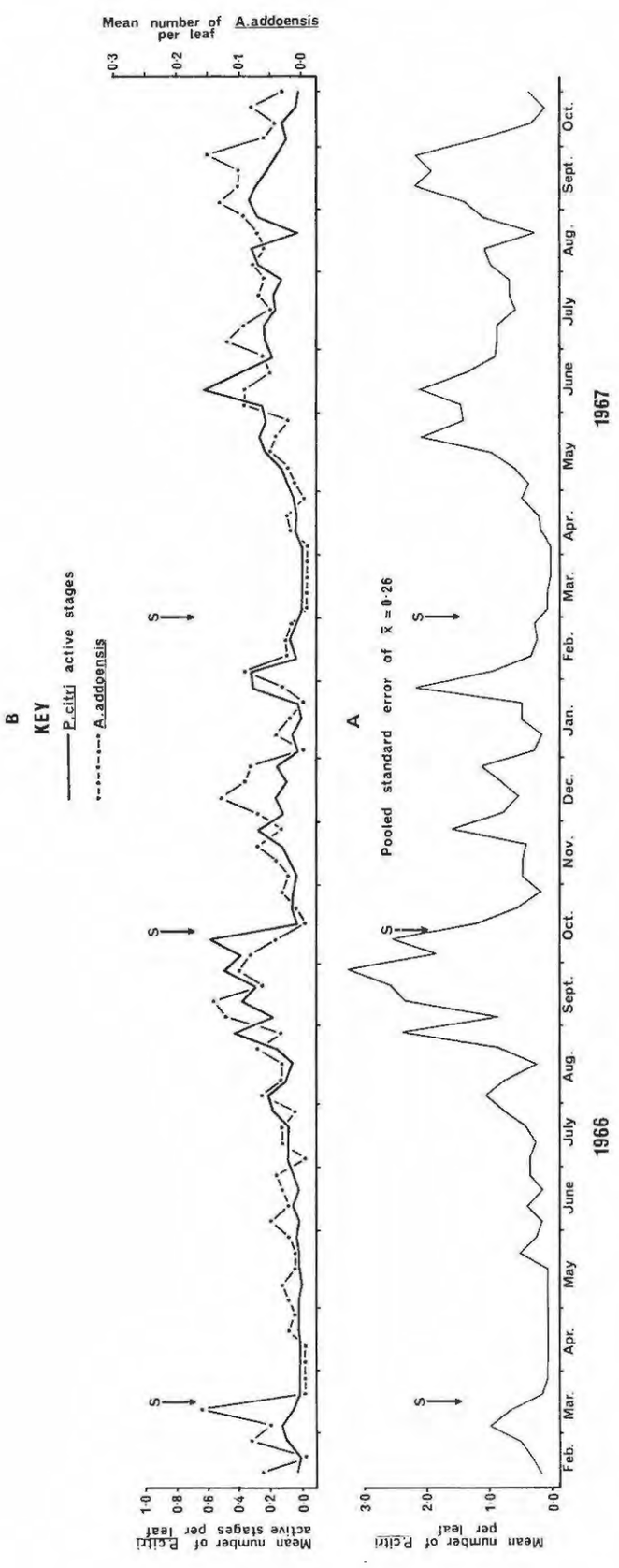
The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to October 1967, on the six replicate trees in the insecticidal trial at "Ruimte" which had been sprayed (S) with 0.075% Parathion + 0.2% Alboleum in October and March 1964-65, 1965-66 and 1966-67.



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The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to October 1967, on the six replicate trees in the insecticidal trial at "Ruimte" which had been sprayed (S) with 0.075% Trithion + 0.2% Alboleum in March 1965, 1966 and 1967.

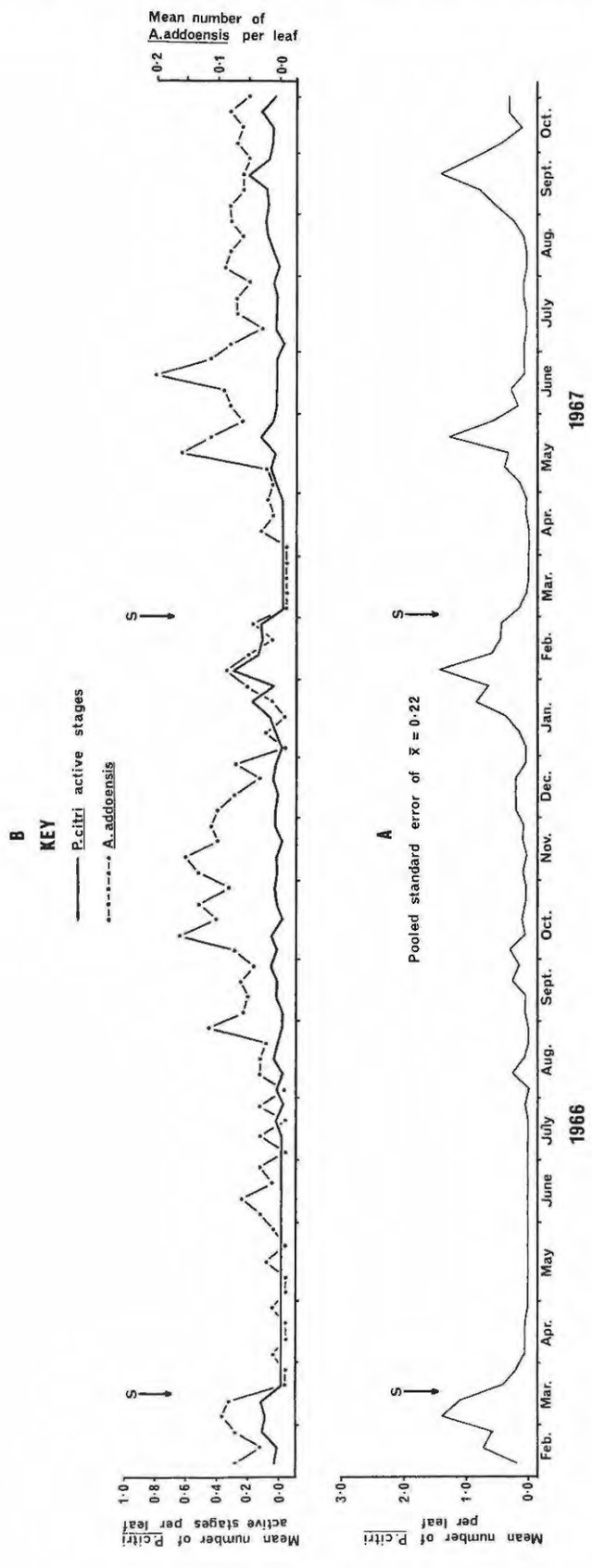

Figure 41.

The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to October 1967, on the six replicate trees in the insecticidal trial at "Ruimte" which had been sprayed (S) with 0.05% Parathion + 0.04% Rogor + 0.2% Alboleum in March 1965, 1966 and 1967.

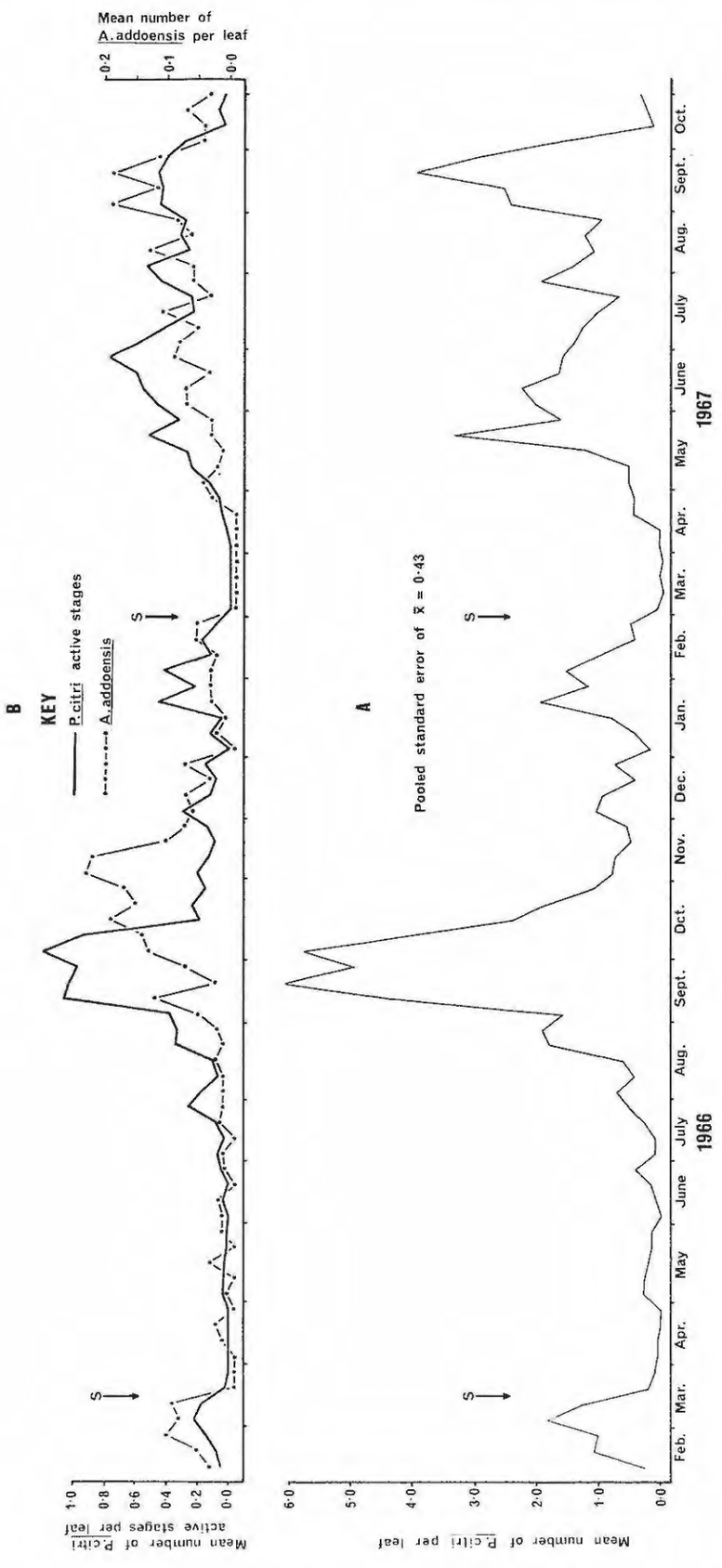

Figure 42.

The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to September 1967, on the six untreated control trees in the insecticidal trial at "Littlecote".

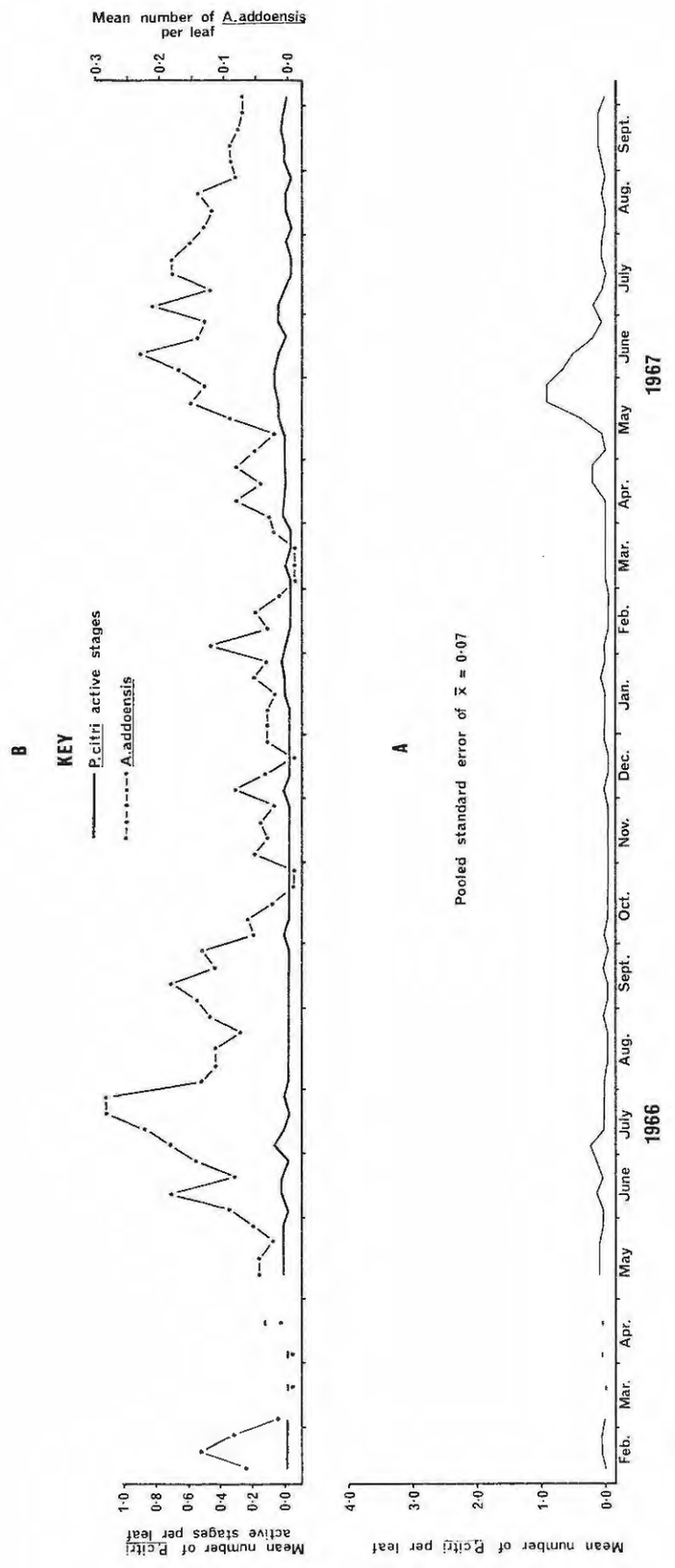

Figure 43.

The variation in - A. the mean number of P.citri per leaf, and B. the mean number of A.addoensis and P.citri active stages per leaf, for the period February 1966 to September 1967, on the six replicate trees in the insecticidal trial at "Littlecote" which had been sprayed (S) with 0.05% Parathion + 0.025% Gusathion + 0.2% Alboleum in October 1964, 1965 and 1966.

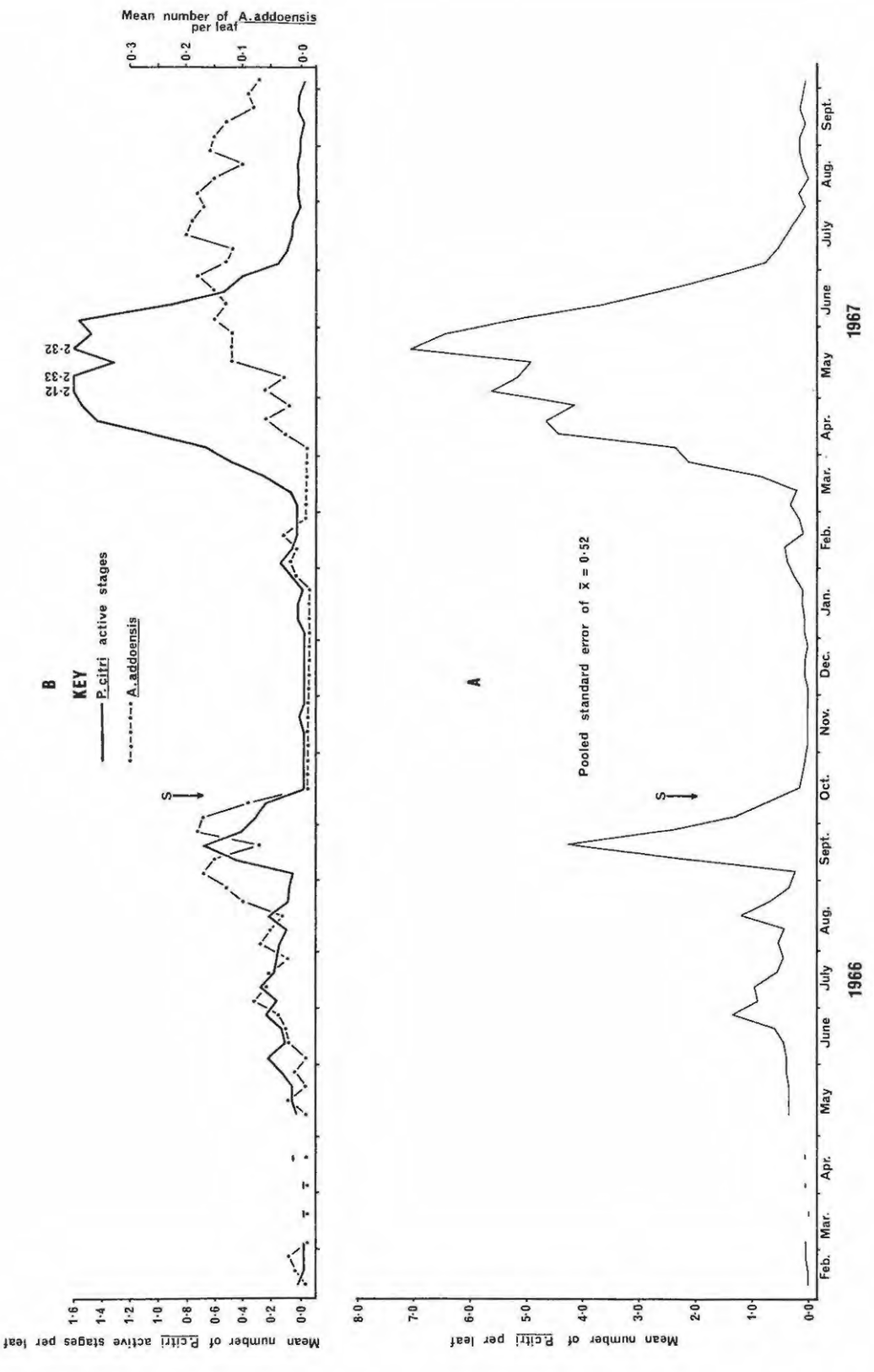

Figure 44.

A hypothetical model of the possible effect of temperature, relative humidity and the predaceous mite, A.addoensis, on the seasonal abundance and population density of the citrus red mite in the Sundays River Valley.