~~15~~.

INVESTIGATION OF THE KIRLIAN PHENOMENON IN INSECTICIDE TREATED PLANTS

Prepared by:

31 August 1972

137

INVESTIGATION OF THE KIRLIAN PHENOMENON IN INSECTICIDE TREATED PLANTS

INTRODUCTION

The [redacted] has conducted an investigation of the Kirlian photographic technique in an attempt to detect the presence of a commercial soil insecticide [redacted] brand Dyfonate) in various species of plants. Dyfonate is a 5% granular organo-phosphorus soil insectide, said to be a non-systemic agent. The insecticide solution was poured over each leaf and ultimately accumulated in the soil of the individual pot.

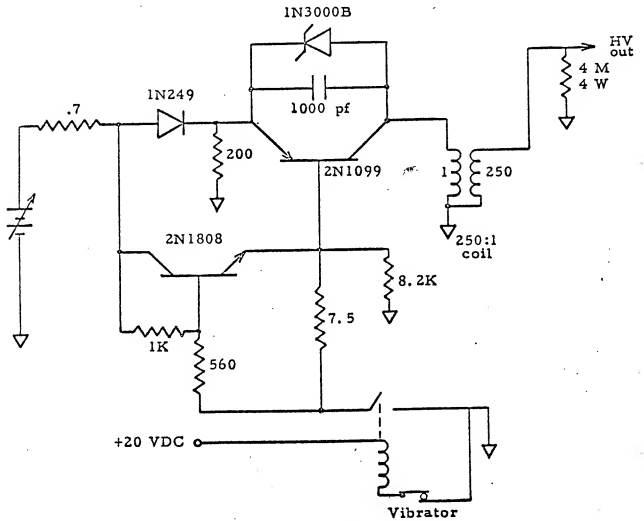
Vibrator excited, dampened high-voltage pulses were applied to radishes, pinto beans, and harvester beans in the Kirlian camera. Color pictures were taken of plants in the untreated control group, low dosage and high dosage groups at intervals of one, two and four days after exposure.

SUMMARY AND CONCLUSIONS

The photographs appear to show no gross changes from day to day or between control and the two treated groups. This result does not necessarily indicate that the Kirlian technique is incapable of detecting this organo-phosphorous insecticide since spectroscopic analysis was not carried out. Also, if the agent is truly non-systemic, large concentrations would not be expected on the leaves. Further investigation using systemic insecticides such as Di Syston or Furadan could have positive results when applied in a carefully controlled test.

Test Procedure and Results

A high voltage oscillator was designed and constructed to be used in the Kirlian camera. The schematic is as follows:



All resistances in ohms

Figure 1.

The output of the Kirlian apparatus is a critically dampened pulse with peak amplitudes of about -4 KV and + 3 KV. Pulse width is about 100us and pulse repetition frequency about 100 pulses per second.

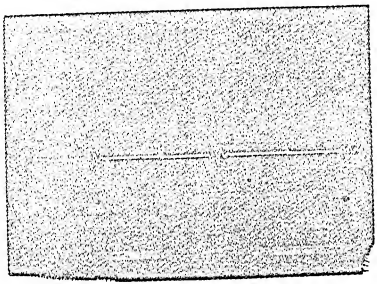


Figure 2.

Twelve randomly selected plants from an initial planting of 50 were grouped as follows:

	Control	Low Dose	High Dose
Early Radish	12*	5	6
Late Radish	48	50	49
Harvester Beans	46	23	41
Pinto Beans	36	28	32

No insecticide was given the control group. Each plant in the low dose group received 2.5 cc of 5% chemical in aqueous solution. Each plant in the high

* Plant identification number

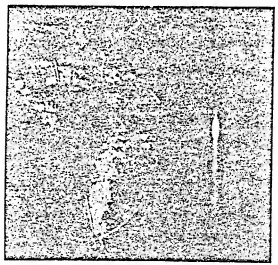
dose group received 25 cc of 5% insecticide in the same manner. The insecticide solution was poured on every leaf and on as much of the stem as possible for the two treated groups. The age of the plants at the start of the test were as follows:

Early Radish	123 days
Late Radish	109 days
Harvester Beans	123 days
Pinto Beans	119 days

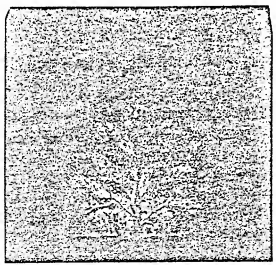
The control and treated plants were photographed on the first, second and fourth day following exposure. In addition, the control group was photographed the day the treatment group was exposed.

CONTROL GROUP

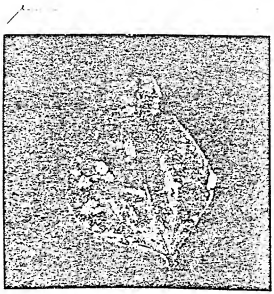
10 July 1972



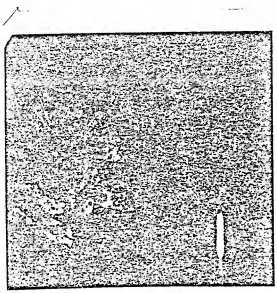
46 Harvester Beans



48 Radish



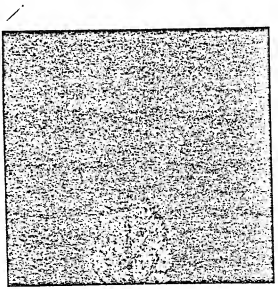
36 Pinto Bean



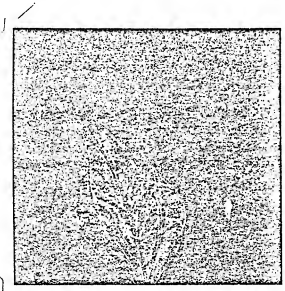
12 Radish

LOW DOSE GROUP

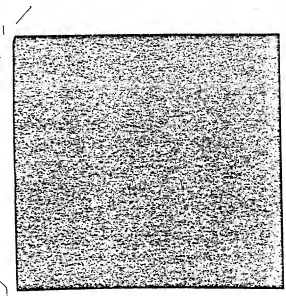
11 July 1972



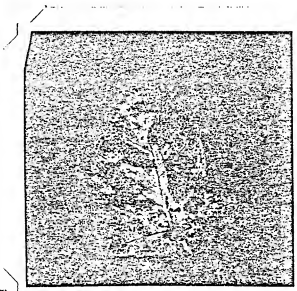
5 Radish



23 Harvester Bean



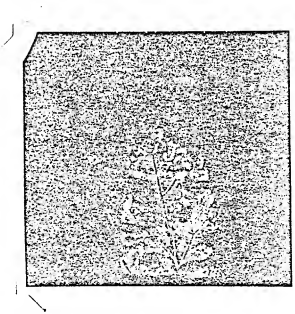
23 Pinto Bean



50 Radish

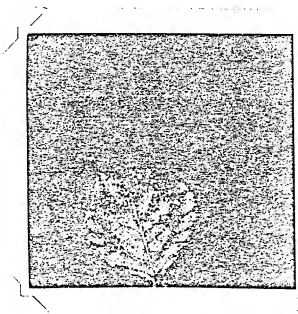
HIGH DOSE GROUP

11 July 1972

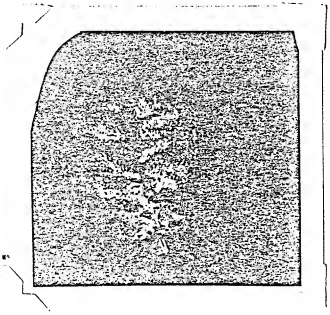


6 Radish

32 Pinto Bean



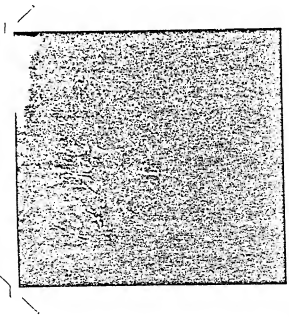
41 Harvester Bean



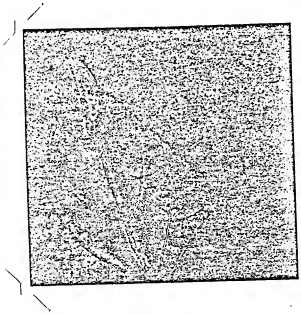
49 Radish

CONTROL GROUP

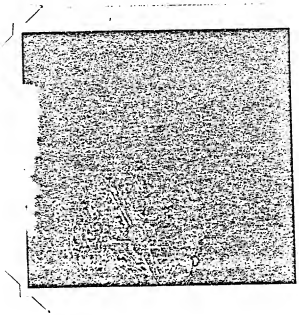
12 July 1972



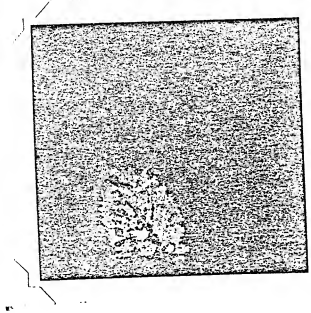
12 Radish



36 Pinto Bean



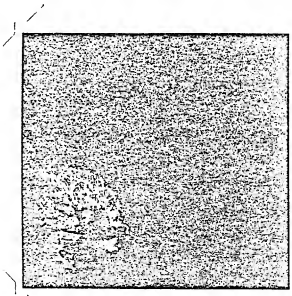
46 Harvester Bean



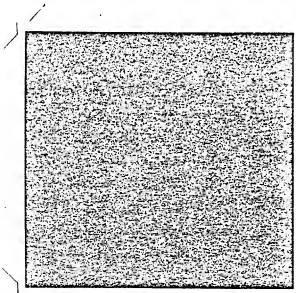
48 Radish

LOW DOSE GROUP

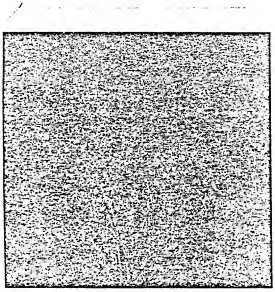
12 July 1972



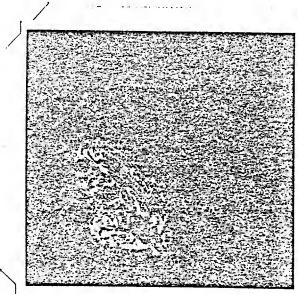
5 Radish



23 Harvester Bean



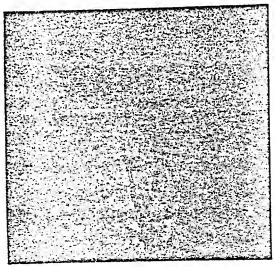
28 Pinto Bean



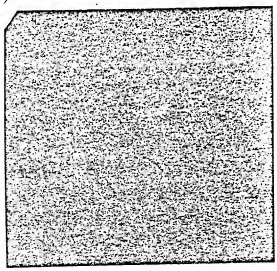
50 Radish

HIGH DOSE GROUP

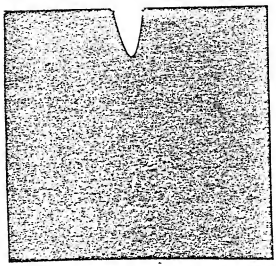
12 July 1972



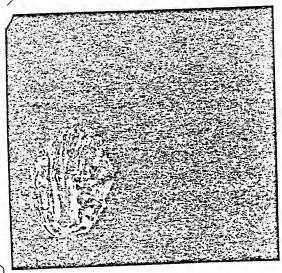
Radish



32 Pinto Bean



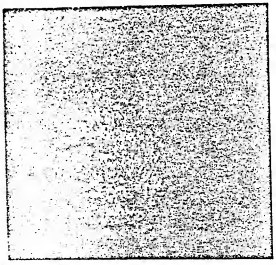
41 Harvester Bean

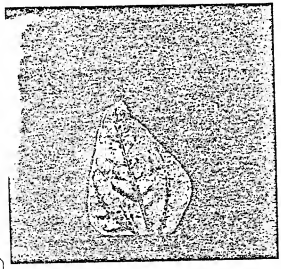


49 Radish

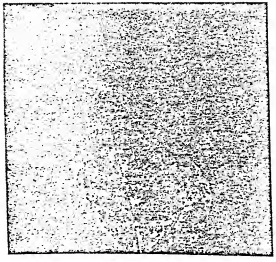
CONTROL GROUP

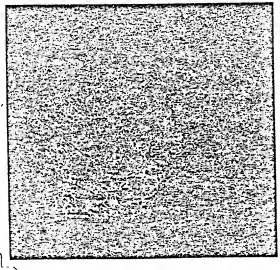
14 July 1972





36 Pinto Bean



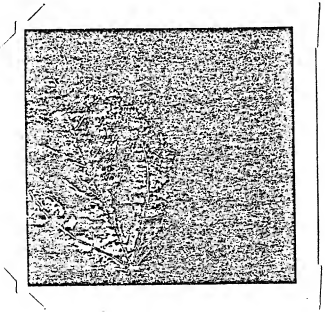


48 Radish

LOW DOSE GROUP

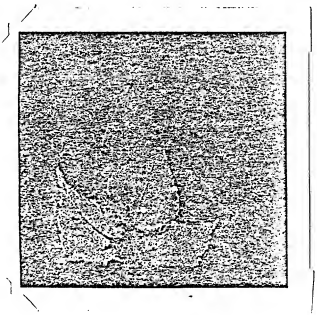
14 July 1972

Plant Damaged



5 Radish

23 Harvester Bean



28 Pinto Bean

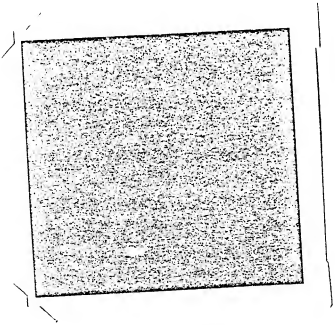
Plant Damaged

50 Radish

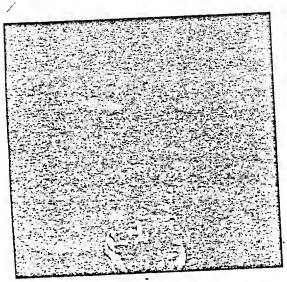
HIGH DOSE GROUP

14 July 1972

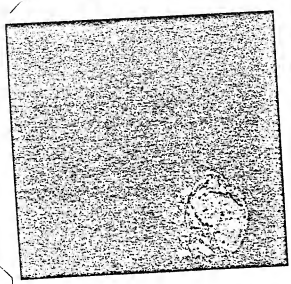
Plant Damaged



6 Radish



32 Pinto Bean



41 Harvester Bean

49 Radish