

Some Suggestions on the Technique of Aerial Spraying of Chemicals in Gorgan

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The importance of the studies on the effective and rapid aerial spraying of chemicals against spiny bollworm "*Earias insulana* Boisd." in Northern Iran became evident in 1966.

In summer 1967 studies were undertaken to determine the efficiency of the method used and also the possibility of correcting the pitfalls present in the technique. In order to achieve this objective the following experiments were carried out by using piper sprayer aeroplanes :

- a. Practical determination of the yield of different orifices.
- b. Determination of the spray coverage and the density of the mist produced by the nozzles in different positions.
- c. Determination of the width of sprayed strip.
- d. Feasibility of the use of ultra-low-volume spraying technique for control of cotton pests.

The methods employed in these experiments are described in the Persian text. a summary of the results obtained is as follows :

Orifices No. D3, D6, D4+ D6, and D4 have different yields which in practice can be regulated through the variations of the pressure and the speed.

With orifices having smaller diameter, a more uniform coverage is obtained; on the other hand, rotating the nozzles foreward to form a 30 degree angle with their vertical axes, a much finer mist is resulted.

Under the conditions existing in Gorgan cotton fields, using the ultra - low-volume spraying technique requires a much less time of operation and cost, and the efficiency of the control is enhanced by several folds.

Suggestions

1. Nozzles with different orifice numbers should not be used on the same aeroplane and the amount of spray per hectare should be regulated by changing the orifices (uniformly) and by the regulation of the pressure and the flight altitude.

2. In order to obtain a finer mist, the nozzles should be rotated 30 degrees foreward.

Pour la meilleure et la plus rapide détermination de ces trois espèces, nous donnons la clef suivante :

- 1 (6). - Dixième tergite abdominal prolongé, celui-ci grand chez le mâle, petit chez la femelle.
- 2 (5). - Valves de l'oviscapte avec une grosse denticulation (mâles connus).
- 3 (4). - Lobes basaux de l'oviscapte comme dans la fig. 4; processus du dixième tergite du mâle comme dans la fig. 1; celui de la femelle comme dans la fig. 3..... *N. dezfouliani* sp. nov.
- 4 (3). - Lobes basaux de l'oviscapte comme dans la fig. 7 ; processus du dixième tergite du mâle comme dans la fig. 5; celui de la femelle comme dans la fig. 6 *N. bienkoi* Ragge.
- 5 (2). - Valves de l'oviscapte avec une denticulation fine (mâle inconnu)
..... *N. robusta* (Bey-Bienko)
- 6 (1). - Dixième tergite abdominal normal dans les deux sexes
..... *N. tibialis* Uv., *persica* (Uv.) et *richteri* (B. - B.).

Bibliographie

RAGGE, D. R. 1959. A new species of *Nephoptera* Uvarov from Persia, with a revised key to species of this genus (*Orth. Tettigoniidae*). - *EOS*, 35, 425-428, 5 fig., Madrid.

Résumé

Description d'une nouvelle espèce iranienne, *dezfouliani*, correspondant au genre *Nephoptera* Uvarov 1929, et suggestions sur les possibilités de regroupement de cette espèce avec *N. bienkoi* Ragge et *N. robusta* (Bey-Bienko) pour constituer un nouveau taxon subgénérique ou générique.

Summary

Description of a new Iranian species, *dezfouliani* corresponding with the genus *Nephoptera* Uvarov 1929, and suggestions on the possibilities of regrouping this sp. with *N. bienkoi* Ragge and *N. robusta* (Bey-Bienko) for forming a new subgeneric or generic taxon.

3. To minimize the danger and increase the efficiency of the operation the flight altitude should not be lower than one meter.

4. Some basic training in pest control and methods of spraying should be provided for the pilots.

5. Using nozzles with smaller orifices usually results in minimizing the cost, hazards of phytotoxicity and increasing the coverage and the efficiency of the control operation.

6. In most instances the aeroplanes used by the Institute of Plant Protection, the two nozzles located between the front wheels do not function. To obtain a uniform coverage it is advised that these nozzles should be made functional.

7. To minimize the contact of the flagmen with the chemicals the following procedure is suggested :

When the aeroplane has determined its path and altitude outside of the field, the flagman standing at the beginning of the strip to be sprayed should start moving toward the next strip; when the plane reaches approximately over the mid-point of the strip, the other flagman should do the same.

8. The most effective amount of the spray per hectare has been found to be 28 liters.

9. The ultra-low-volume technique of spraying for control of cotton pests in Iran seems very promising and it is suggested that this method should be studied further .