

A FIELD TRIAL WITH A SINGLE APPLICATION OF INSECTICIDES TO CONTROL THE RICE STEM BORER, *CHILO SUPPRESSALIS*

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The authors have previously reported (1963) that poor kill of the larvae of the paddy borer, *Schoenobius (Tryporyza) incertulas* Walker became evident with some foliar sprays applied by a conventional knapsack sprayer beyond certain stage after transplanting when growth of the plants was so dense preventing the sprays from hitting the straws in which the larvae were feeding.

In this trial, an investigation was made to determine whether or not significant control of the rice stem borer, *Chilo suppressalis* Walker which similarly feeds in the straw as the paddy borer, could be obtained with some compounds applied only once soon after transplanting before growth of paddy reached undesirable conditions for foliar treatment.

MATERIALS AND METHODS

The trial was conducted in the paddy field at Taiwan Agricultural Research Institute, Taipei. The variety of paddy used was Taichung No. 65, transplanted on March 26th 1964 (distances between hills: 25×25cm). Each plot was 0.36 hectare in area, and was arranged at random. Insecticides were applied on April 25th when the infestation with the rice stem borer averaged about ten percent, and most of the borer were in their first or early second instars. The test chemicals and the dosages used were as follows: 1.8 kg of gamma BHC per hectare for 6 % BHC granule and 3 % BHC dust; 1,000 liters of water containing 0.05 % actual ingredient per hectare for 50 % Imidan wp, 50 % Dimecron wp, 50 % Cidial ec, 47 % perathion ec, and 45 % EPN ec. Sprays were applied after draining the irrigation water with a knapsack mist blower; the plants being blown twice from the opposite directions so as to secure good coverage with the liquids. There was a rain fall a day after treatment, flooding over two plots treated with BHC (granule, replicate no. 4; dust, replicate no. 4). In two plots received BHC (granule, replicate no. 1; dust, replicate no. 4), irrigation water leaked completely in three days. However, they were irrigated again as soon as little free water was standing on soil. Mortality of the larvae was counted on 50 hills on May 1st and 2nd, and again on 30 hills on May 4th and 5th. The results are shown in table 1. On July 3rd and 4th, infestation with the borers was investigated by examining the white ears caused primarily by the rice stem borer. The crop was harvested on July 6th, and the green weight of grains produced in each plot was recorded. These data are presented in table 2.

RESULTS

Results of the present work show that highly effective control of the larvae was obtained with such insecticides as parathion, Cidial, EPN, and Dimecron when applied as foliar sprays on the first crop about one month after transplanting. However, Imidan was rather inferior, and BHC was poor, which seemed owing, in this case, to rain or some other causes unknown. At the heading stage, however, no significant difference was found in number of the white ears caused primarily by the rice stem borer, and in yield of rice between treatments. Since this trial was conducted in a rather isolated paddy field, it is considered that re-infestation with the borer originated from the pest multiplied in untreated plots, or in some treated plots where kill of the larvae was not adequate. When treatment is made on the entire plot in a large plantation at a proper time, significant control of the borer might be possible with this single treatment method with certain compounds.

Table 1. Effectiveness of some insecticides against the larvae of the rice stem borer, *Chilo suppressalis* Walker, Taipei, 1964.

Treatment	Percent Mortality of Larvae				
	Replicate I	II	III	IV	Avg
6 % BHC granule	18.9	43.8	11.4	60.0	33.5
3 % BHC dust	60.5	36.4	55.6	11.5	41.0
50 % Imidan wp	50.7	65.1	92.3	76.1	71.1
50 % Dimecron wp	73.0	86.8	97.6	98.8	89.1
50 % Cidial ec	93.0	100.0	97.0	94.0	96.0
47 % Parathion ec	100.0	99.0	96.8	92.3	97.0
45 % EPN ec	89.4	93.8	92.5	95.7	92.9
Untreated	4.6	1.5	1.5	2.7	2.6
LSD at 5 % Level					19.3
1 %					27.0

Table 2. Number of white ears caused primarily by the rics stem borer, *Chilo suppressalis* Walker, and yield of rice in various treatments, Taipei, 1964 (each plot 0.36 hectare in area).

Treatment	No. of white ears in 4 replicates and (avg)					Green weight (kg) of grains in 4 replicates and (avg)				
	6 % BHC granule	309	109	132	616	(292)	16.1	17.3	17.7	19.7
3 % BHC dust	296	141	37	261	(184)	19.0	17.8	16.9	19.9	(18.4)
50 % Imidan wp	187	108	71	59	(106)	19.7	17.1	19.7	13.9	(17.6)
50 % Dimecron wp	181	62	93	44	(95)	19.9	16.7	19.9	14.5	(17.8)
50 % Cidial ec	192	67	91	44	(99)	19.4	16.9	20.5	13.7	(17.6)
47 % Parathion ec	253	75	253	73	(164)	17.1	17.6	22.8	16.3	(18.5)
45 % EPN ec	132	81	159	40	(103)	18.2	17.7	18.0	14.9	(17.2)
Untreated	218	114	132	106	(143)	18.2	15.7	13.3	13.8	(15.3)
LSD at 5 % level										3.4
1 %										4.6

REFERENCE CITED

Sung-yang Lee and Wen-yau Hong. 1963. Residual Toxicity of Some Insecticides against the Newly Hatched Larvae of the Paddy Borer, *Schoenobius incertulas*. Agr. Res. Vol. 12, No. 3, pp. 40-51.

水稻二化螟蟲田間單次施藥試驗簡報

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摘 要

水稻移植二個月後行莖葉噴藥方法對三化螟幼蟲無大防治效果之試驗報告曾提出於本刊（1963年3月），因此設想在移植後一個月間應用前項噴藥法行一次用藥或許能有防治效果上之意義。本工作即基於該概念使用數種藥劑對二化螟進行試驗，其結果 Parathion, EFN, Dimecron 及 Cidial 等對其幼蟲具有充分之殺蟲力，但爾後調查其白穗發生數及收量，各處理區間未獲得有意義之差異。然由於本項試驗僅以小試驗區進行，對照及藥效較差之試驗區留存之螟蟲似能繁殖而移至他區為害，因此大面積之稻田照本試驗之方法行一次施藥或可收到相當之防治效果。