Control of the Rice Stem Borer(*Chilo suppressalis*) with the new Insecticides

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This experiment was planned to compare the effectiveness of Endrin and Lebaycid on the rice stem borer in the first generation with EPN, Folidol, Diazinon, and Dipterex which have been used in Korea and to compare the effectivenees of the new insecticides with Dimecron, Detron, and Gamma-dol on the rice stem borer in the 2nd generation.

Materials and Methods:

The adult moths were collected by the light trap in the vicinity of the College of Agriculture, Suwon, and reared in the metal screen field cages. They deposited the eggs on the leaves of the rice plants which were planted in pots of 15 cm. in diameter and 18 cm. in depth. There were five rice plants in a stock of paddy and three stocks of paddy were planted in each pot. Those pots were covered with metal screen of 50 mesh for the rearing of adult moths and the egg laying.

Insecticides and their formulations used in the experiment were as the followings.

The first generation

Insecticides	*Dilution (times)*	*Concentration (%)*
Endrin Em. C. (19.5%)	400 x	0.055
Folidol Em. C. (46.6%)	2000 x	0.025
Diazinon Em. C. (20%)	400 x	0.055
Dipterex Em. C. (50%)	1000 x	0.060
Lebaycid Em. C. (50%)	1000 x	0.060

The 2nd generation

Insecticides	*Dilution (times)*	*Concentration (%)*
Endrin Em. C. (19.5%)	400 x	0.055
Detron Em. C. (25%)	300 x	0.083
Folidol Em. C. (46.6%)	1500 x	0.039
Dimecron W. P. (50%)	1000 x	0.050
Gamma-dol Dust (6%)	—	6

The rice plant in pots was treated with each concentration of the insecticides above mentioned, about 10 cc by the handsprayer from the distance of 45 cm. and about 0.5 g. gamma-dol was dusted on the water surface by hand.

In this experiment, the intervals of timing of application was as the followings.

The first generation

The interval of spraying	*Date of sprayig*
At 14 days before hatching	6/7
At 8 days before hatching	6/14
At 4 days before hatching	6/18
At 5 days after boring into the stem	6/21
At 10 days after boring into the stem	6/24

The 2nd generation

At 21 days before hatching	7/5
At 14 days before hatching	7/20
At 7 days before hatbhing	7/25
At 2 days after boring into the stem	8/4
At 7 days after boring into thd stem	8/5

A female moth was allowed to oviposit a single egg mass per pot and the average number of an egg mass used was 65. The number of living larvae was counted by dissecting the rice plant 20 days later after hatching. The experiment was running as triplication.

Results:

The results of this experiment are presented in Table 1. and Fig. 1.

Table 1. Effect of several insecticides treated on the rice stem borer. (totalnumber of living larvae was counted at 20 days later from hatching.)

The first generation

	At the days before hatching			*At the days after boring into the stem*	
Insecticides	*14*	*7*	*4*	*5*	*10*
Endrin	32	14	26	1	3
Folidol	37	66	34	1	1
Diazinon	17	86	45	8	3
Dipterex	121	38	50	0	1
Lebaycid	31	42	66	1	0
Control	144	148	154	66	86

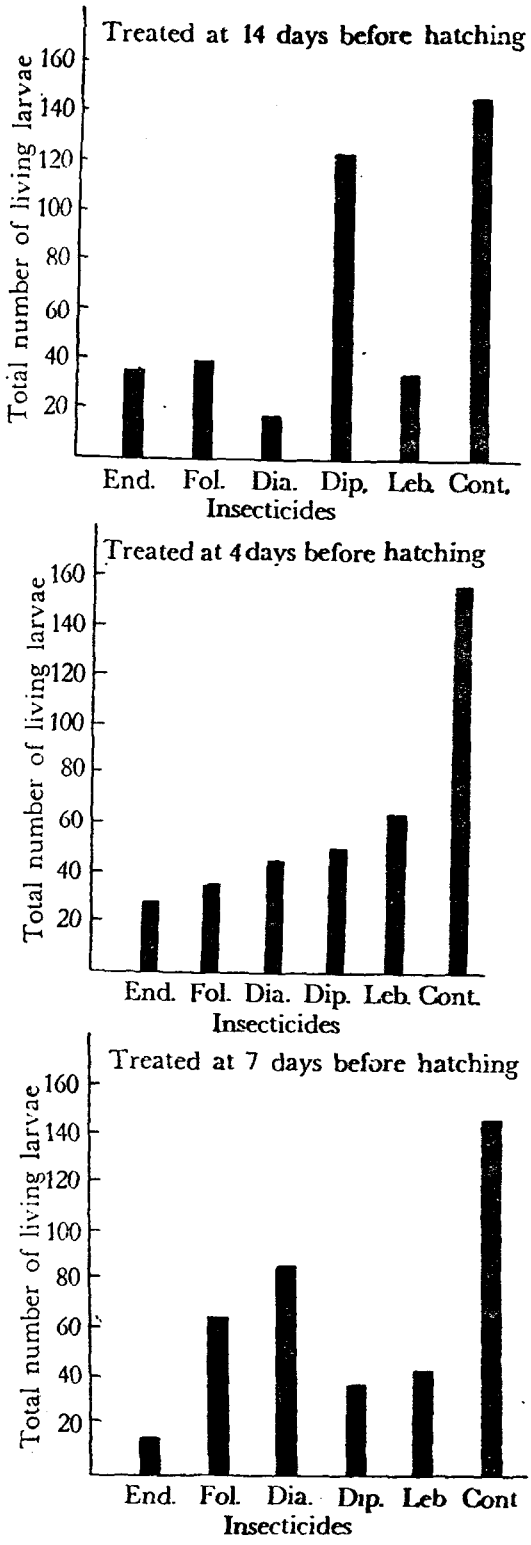

Fig. 1. Effect of insecticides on the rice stem borer. (Total number of living larvae was counted at 20 days later from hatching.)

The 2nd generation

Insecticides	At the days before hatching 21	14	7	At the days after boring into the stem 2	7
Endrin	58	0	0	4	0
Detron	0	0	0	0	0
Folidol	0	0	0	0	0
Dimecron	113	0	0	0	0
Gamma-dol	20	58	37	39	60
Control	115	222	133	112	137

The results of statistical analysis was as the followings.

Table 2. Analysis of variance for the effect of the insecticidal treatments and day intervals in the control of the rice stem borer (in the first generation).

Sourse of variance	Degrees of freedom	Sum of squares	Mean squares	Fvalue
Total	89	27046.06	—	—
Treatment	29	22314.06	769.450	<1
Chemical treatment	5	11969.62	2393.64	3.035 (at 5% level)
Day intervals	4	5951.20	1487.800	1.887 (n.s)
Error	60	4732.00	788.666	—

LSD = 20.5 (between treatments of insecticides)

Conclusions:

The first generation:

As shown in Table 1. and Fig. 1. Diazinon, Lebaycid, Endrin, and Folidol at 14 days before hatching presented good residual effect except Dipterex, and all the insecticides used was effective at 7 and 4 days before hatching and 5 and 10 days after boring into the stem. But as shown in Table 2. although effect of the day intervals to insecticidal treatments was non-significant. The most important factor in obtaining good control of rice stem borer seems to be correct timing of the applications from 10 days before hatching and 10 days after boring into the stem in the first generation with the insecticides used in this experiment.

The 2nd generation

As shown in Table 1, insecticidal treatments at 21 days before hatching were effective as the following orders : Detron = Folidol 〈Gamma-dol Endrin〉 Dimecron. In the treatments at 14 and

7 days before hatching and 2 and 7 days after hatching, all the insecticides were highly effective except Gamma-dol. The most important factor in obtaining good control of rice stem borer seems tobe correct timing of applications as in the first generation. With Detron from 21 days before hatching to 7 days after boring and with Endrin and Dimecron from 14 days before haching and 7 days after boring resulted in good control of rice stem borer in the second generation.

Since we found some unclear results in this experiment, we are hoping that this experiment will be repeated several times with several considerations governed the control of rice stem borer.

摘　　要

1. 本試驗은 二化螟虫防除에 有效하다고 認定된 新殺虫劑를 選定하여 二化螟虫에 對한 殺虫效果의 再確認 및 撒布適期를 究明코저 施行하였다.
2. 第一化期에 있어서 Diazinon, Lebaycild, Endrin, 및 Folidol 은 孵化 14日前 處理로서도 孵化幼虫의 嗾入防止劑로서 有效하였고 孵化幼虫嗾入後日處理區에있어서도 無處理區에 比하여 有效하였다.
3. 第二化期에있어 孵化 21日前 處理區의 有效性은 Detron=Folidol>γ—dol>Endrin>Dimecron 의 順이었다. 그리고 孵化 14日 및 7日前과 孵化 2日 및 7日後 處理에 있어서도 γ-dol을 除한 다른 藥劑들은 高度의 有效性을 나타내었다.
4. 그러나 藥劑處理時期 사이에는 有意性이 없었다.
5. 本試驗은 1回의 試驗成績임으로 同一試驗이 數回反復되어 殺虫效果 및 撒布適期가 完全히 究明되었으면 한다.

1962年에 發生한 主要病害虫

編　輯　委

○ 水　稻

例年에 보기 드문 旱魃에 뒤이은 降雨로 말미암아 잎稻熱病이 늦게까지 많이 發生하였고, 穗首稻熱病病害率이 1961年의 4.2%에 比하여 27.3%이 었다. 특히 全羅南北道에 심하였다.

從前까지는 重要視되지 않았던 짚무늬마름병(紋枯病)의 發病率이 34.1%(위의 데이타는 京畿道內 67個地點의 調査結果임)이었음은 注目을 要한다. 平澤 安城, 金堤地方에서 더욱 심하였다. 裡里地方을 중심으로한 줄무늬마름병(縞葉枯病)의 大發生도 特記할만하다.

○ 麥　類

보리의 깜부기병이 例年에 比하여 적었고 녹병 류흰가루병도 가뭄으로 因하여 늦게 若干 발생하였다.

○ 菜　蔬

例年과 다름 없이 감자의 바이러스病은 어느 곳에서나 被害가 컸으며 大關嶺의 種薯生産地에서는 늦게 疫病이 많이 발생하였다. 무우·배추의 모자이크病은 例年에 比하여 적은 편이었으나 세균성 무름병(細菌性軟腐病)의 피해가 컸고, 오이·양파의 露菌病(東萊)도 적지 않았다.

○ 果　樹

病原未詳의 사과赤痲病(假稱)이 全國的으로 발생하였으며 특히 大邱地方은 이 病으로 因하여 廢園된 곳도 있었다. 忠州地方에 사과 腐爛病(*Valsa mali*), 水原·禮山地方에 줄기마름병(胴枯病; *Phomopsis truncicola*)이 大發生하였다.

○ 樹　木

針葉樹의 모잘룩병(子苗立枯病)이 各 地方에 大發生하였고, 京畿道華城郡에서는 은행나무 잎마름병(假稱, *Pestalotia* sp.)의 被害率이 92%이었다.

○ 갓노랑비단벌레(*Lampra bellula*)

1961년부터 全北 羅州地方에 突發的으로 발생하기 시작하여 배나무 및 사과나무에 큰피해를 주고있다. 幼虫이 배나무의 樹幹·가지의 껍질밑 形成層과 木質部에 편평하고 不規則한 坑道를 만들며 喰害하는데 하늘소類와 달라서 虫糞을 坑道外에 排出하지 않으므로 早期發見이 곤난하고 發生期가 고르지 못하므로 防除하기 힘든 害虫이다.

○ 밤나무순혹벌(*Dryocosmus kuriphius*)

1961年 忠北과 江原道에서 발생되었으나 現在는 거의 全國에 分布한다. 밤나무의 葉芽에 寄生하여 虫癭을 形成하므로 結實을 보지 못하고 甚하면 樹勢가 약해지고 枯死한다. 銀寄 其他 免疫性品種으로更新하는 道理밖에 없을 것 같다.

○ 솔잎혹파리(*Thecodiplosis pinicola*)

全南北, 慶南, 서울附近 光陵까지 分布. 계속 莫大한 被害를 주고 있다.

○ 흰불나방(*Hyphantria cunea*)

1958年에 輸入된 害虫이나 서울을 中心으로 分布가 擴大되어 現在는 仁川, 水原에까지 이르고 있다. 集中的인 藥劑撒布로 發生數는 적어졌으나 언제 어디서 발생될지 모르므로 경계를 소홀히 해서는 안될 것이다.

○ 어스렝이나방(*Dictyoploca japonica*)

昨年度 水原地方에서 發生이 甚하여 밤나무, 호두나무, 프라타나스 등에 막대한 被害를 주고 있다.

○ 집시나방(*Liparis dispar*)

1956年부터 繼續發生中이나 地方에 따라 發生相에 差異가 있다.

○ 독나방(*Euproctis subflava*)

1936年 黃海道에서, 1957年 洪川·春川地方에서 1958~1959年에는 全國的으로 大發生하였다. 1962年에는 다시 大發生할 徵兆가 보인다.

○ 가루깍지벌레(*Pseudococcus comstocki*)

有機燐劑의 連用으로 서울·慶北·全南北에 發生이 甚하다.