葱薊馬粒狀殺蟲劑之防治試驗[1]

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摘 要

葱薊馬是葱、韮、蒜等石蒜科蔬菜之重要害蟲，在本省多於低溫期9月至翌年4月間發生爲害，被害嚴重之葉多數呈發育不良、萎縮，甚致枯死，故影響產量甚鉅。本試驗採用8種粒狀殺蟲劑，處理定植溝土壤，每種藥劑分二種藥量，即每公頃有效成分1.0及1.5公斤，施藥後立即定植葱苗，經30、50、70及90天調查潛蠅之爲害率。結果除 Dyfonate 藥效較差外，其他各處理均有良好效果，惟高藥量（1.5公斤／公頃）比低藥量（1.0公斤／公頃）之藥效爲佳，同時藥劑間以 Thimet 與 Cyolane 比其他藥劑 Disyston, Solvirex, PSP 204, Perfekthion 及 Hosdon 之藥效長，前者約可維持90天左右，後者約可維持40天左右。

一、前 言

葱薊馬（*Thrips tabaci* Lindemen）爲石蒜科蔬菜類如葱、蒜及韮菜等之主要害蟲，在臺灣常於低溫之9月至翌年4月間發生。主要爲害葉部，尤以背光及背風之一面，或葉部折摺之內側受害最甚。葱薊馬具有銼吸式口器，加害時僅銼碎葉之表皮組織，故被害部均呈蒼白色細斑點，嚴重者常使葉部由葉尖部起向下乾枯，影響被害植株發育及產量甚鉅。葱薊馬不論成蟲或若蟲行動敏捷，如被觸動，立即跳離葉部，故調查時無法計其蟲數，僅能採取葉部，檢查被害葉數及被害程度。

本試驗採用粒狀殺蟲劑，於葱苗移植時施藥於植溝中，預防葱薊馬之爲害。關於採用粒狀官能性殺蟲劑處理土壤，以預防作物地上部害蟲之試驗，已有較多報告，尤其防治薊馬之試驗有 Cleveland 與 Smith (1965)，用 Disyston 粒劑防治棉花薊馬⑩，Verma (1966) 在印度防治葱薊馬⑰，Howland 與 Davis 用多種粒劑防治葱薊馬及蚜蟲，證明具有6至9星期效力⑬㉑㉒，Davis 等 (1966) 以多種粒狀官能殺蟲劑預防棉薊馬、蚜蟲、葉潛蠅、紅蜘蛛及浮塵子等，亦證明具有1至2個月之治蟲效果⑫。Cowan 與 Davis (1967) 以 Temik 粒劑防治棉薊馬及浮塵子亦有5至10星期之治蟲效果⑪。由此可見粒狀官能殺蟲劑防治作物害蟲方面之實績，並已大量被採用進行試驗。本試驗進行時得施新富技術助理員協助，報告整理後承應用動物系邱主任瑞珍、陶家駒及林珪瑞先生等斧正，特此伸謝。

二、試 驗 材 料

（一）作物品種：四季葱。

（二）試驗藥劑：

1. 5%PSP 204 G. : 0, 0-Disopropyl-S-ethylsulfinyl methyldithio phosphate.
2. 5% Di-syston G. : 0, 0-Diethyl-S-2 (ethylthioethyl) phosphorodithioate.
3. 5% Solvirex G. : 0, 0-Diethyl-S-2 (ethylthioethyl) phosphorodithioate.
4. 5%-Perfekthion G. : 0, 0-Dimethyl-S-(N-methyl carmamoyl methyl) phosphorodithioate.
5. 5% Dyfonate G. : 0-Ethyl-S-Phenyl-ethyl phosphorodithioate.
6. 5% Hosdon G. : 0, 0-Dimethyl-S-isopropythioethyl phosphorodithioate.
7. 10%Thimet G. : Phorate (0, 0-diethyl S-ethyl thiomethyl) Phosphorodithioate.

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1. 試驗報告農試字第六三二號。
2. 臺灣省農業試驗所技士。

8. 10% Cyolane G. : 2- (diethoxyphosphosphinylimino) -1, 3-dithiolane.

三、試 驗 方 法

(一) 田間設計　供試之八種粒狀殺蟲劑，每種採用二種用量，即每公頃使用有效成分1.0及1.5公斤，8種藥劑有16處理與一無施藥對照，共計17處理，採逢機完全區集設計，重複4次，共68小區，每小區面積 12m² (1.2×1.0m)，行距 30 cm，株距 20 cm，每小區種植30行，每行6叢。

(二) 施藥方法　每小區之施用藥劑，均按面積秤妥藥量，分別裝入塑膠袋，每小區一包，於整地後將每一塑膠袋自下角剪一小孔，粒劑即由小孔中撒出，均勻撒施於定植溝中，施藥後即定植葱苗，全區定植後於夜晚引水灌溉，至土壤濕潤爲度。

(三) 試驗經過　本試驗地設於新竹縣香山鄉朝山村12鄰42號林錦澤農友葱田內，於59年10月23日施藥及定植葱苗，定植後30、50、70及90天各進行調查一次，計算被害葉率及被害程度，經 118日，至60年2月20日採收，採收時並抽樣調查各處理區之產量。

(四) 調查方法

①被害葉率調查　按預定調查日期，於每小區中隨機取樣10叢，每叢採取2葉，所採之葱葉以一株之中心葉向外之第4及5葉爲取樣對象，每小區共採取20葉，攜回室內檢查。檢查時如發現有薊馬爲害之蒼白色斑痕，不論被害之多少，均以被害葉計算，再換算爲被害葉百分率。

②被害程度調查　將各小區所採取之20葉樣本，經檢查計算被害葉率後，再將被害葉之爲害斑痕分成三級，即被害斑痕佔葉面積 $\frac{1}{3}$ 以下者爲一級，$\frac{1}{3}$ 至 $\frac{2}{3}$ 爲二級，$\frac{2}{3}$ 以上爲三級，再以被害率換算公式 $H=\frac{3n_2+2n_2+1n_3}{3N}\times 100$ 代入，換算其被害程度，最後再以變方分析測定其最低差異顯著度，作爲各處理有效程度之比較。

四、試 驗 結 果

葱 薊 馬 防 治 效 果

Effectiveness of granulated insecticides against onion thrips in the experiment

處理 Treatment	藥量 Dosages kg/ha	處理後日數 Days after treatment 30 被害葉率 % of leaves infested	30 損害率 % of damaged	50 被害葉率 % of leaves infested	50 損害率 % of damaged	70 被害葉率 % of leaves infested	70 損害率 % of damaged	90 被害葉率 % of leaves infested	90 損害率 % of damaged	產量 Yield kg/ha	指數 %
5% PSP 204 G.	20	62.24	34.28	64.52	40.28	70.13	45.36	79.54	58.63	28,025	108.20
	30	48.27	26.09	53.32	29.81	58.47	42.16	68.41	56.13	32,875	126.58
5% Dysiston G.	20	40.25	18.27	49.12	22.96	64.39	40.36	71.68	51.36	31,250	120.66
	30	50.12	22.72	49.52	23.24	51.46	38.63	60.93	51.24	32,850	126.83
5% Solvirex G.	20	53.60	25.41	51.52	28.53	65.19	43.58	72.13	52.14	31,400	117.37
	30	36.70	16.97	43.28	20.46	50.86	38.93	61.56	51.05	32,650	126.06
5% Perfekthion G.	20	60.09	32.75	62.17	26.73	68.19	41.58	78.14	58.54	31,650	122.20
	30	53.92	29.95	48.17	30.17	56.39	40.14	68.49	54.36	32,600	125.87

5% Dyfonate G.	20	71.63	46.00	77.79	50.31	80.13	55.21	84.13	61.36	30,350	117.18
	30	64.63	32.62	75.54	38.98	76.54	41.83	82.36	58.44	31,225	120.56
5% Hosdon G.	20	55.80	29.00	49.89	34.47	76.53	53.74	78.34	63.43	28,675	110.71
	30	55.70	28.54	58.08	32.99	69.19	53.56	76.54	60.14	30,475	117.66
10% Thimet G.	10	31.28	12.60	33.07	15.50	53.75	36.40	56.09	42.74	42,635	164.61
	15	15.55	7.03	15.96	8.19	38.97	32.82	42.91	34.24	44,475	171.72
10% Cyolane G.	10	24.51	9.35	25.21	12.29	30.31	33.12	50.67	43.55	42,675	164.77
	15	7.12	4.83	7.94	5.52	24.63	28.31	36.09	33.71	44,675	172.49
Check	—	65.57	36.03	66.79	41.87	68.23	50.14	77.68	63.26	25,900	100.00
L. S. D. 5%		5.40	7.15	7.93	7.11	9.86	12.36	11.43	13.84		
L. S. D. 1%		7.20	9.53	8.90	9.48	12.94	14.58	14.68	15.13		

五、結果及討論

（1）綜觀本次試驗使用 8 種粒狀殺蟲劑之植溝施藥方法，以預防葱薊馬發生爲害之效果，除 Dyfonate G 較差外，其他 7 種藥劑對葱薊馬均可達到預防效果。惟用藥量高之每公頃有效成分 (a. i) 1.5公斤，比用藥量低之每公頃1.0公斤爲佳，其有效期間大約均可維持50天以上。

（2）Thimet 與 Cyolane 粒劑之二種用藥量對葱薊馬之預防均有效，且比其他 6 種藥劑優異，而此二種藥劑對葱薊馬之藥效及有效期均極相似，可維持90天左右，不過查其被害率在70天時已突然增高許多，顯示其藥效可能在70天左右已形減退，惟其被害率不致立即增高至與對照區相同程度，故其藥效至90天時仍然比對照區爲顯著。同時二種藥劑之高低用藥量間亦有差異，顯然高用藥量比低用藥量爲佳，且其差異極顯著，又此二種粒劑對葱薊馬之藥效頗爲相近。

（3）Disyston 與 Solvirex 粒劑對葱薊馬之預防效果頗接近，依此試驗方法均可維持至50天左右，惟其效果不如 Thimet 與 Cyolane，有效期間亦較短。

（4）PSP 204, Perfekthion 及 Hosdon 等粒劑對葱薊馬之預防效力頗接近，但不如 Dysiston 與 Solvirex。

SOIL TREATMENT WITH GRANULAR INSECTICIDES AGAINST ONION THRIPS, *THRIPS TABACI* LINDEMEN

Liang-Chuan Chang

Onion thrips (*Thrips tabaci* Lindemen) is a major insect pest of Green onion, Chinese leek, Onion, Garlic and other Amaryllidaceae crops in Taiwan. Parathion, PM, or EPN sprays are frequently used by the farmers in the cooler season during October to next April every year. However, the control expenses seems rather high because of repeat applications, long growing period of green onion or other Amaryllidaceae crops have to be applied every 7—10 days during the 4 growing months.

The test was conducted at Hsiang-Shan, Hsin-Chu from October 1970 to next February, 1971, to determine the effectiveness of soil treatment between 8 different granular insecticides for the control of onion thrips on Green onion. Rates of 1.0 and 1.5 kg a. i. per hectare were tested respectively for each granular insecticides and the total 16 treatments and one control were designed. Randomized Complete Block Design four replications. The insecticides were applied into furrow of ground before planting. Percentage of infestation were counted on 30. 50. 70. and 90 days after treatment. Tested crop was harvested on February 20, 118 days after planting and then counting the yield.

The results indicated that all of the insecticides except for Dyfonate G. could give effective control of Onion thrips. The higher dosage of the same tested insecticide, the better control of the target insect. For instance, at the rate of 1.5 kg a. i. /ha. Disyston 5G., Solvirex 5G., PSP204 5G., Perfekthion 5G., and Hosdon 5G., all gave significant difference than the lower rates as 1.0kg a. i. /ha. respectively. However, the best result obtained from the treatment of Thimet 10 G. and Cyolane 10G. at rate of 1.0kg a. i. /ha were found as well as the highest rate of other insecticides and moreover. It can be concluded as the application of these two granular insecticides will be proved to be good for the insect pest during the long growing season, because of the lower cost of application and higher yield. The yield of all treatment plots have shown 8.20-72.49% more than the untreated plots.

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