為害柑橘枝葉及果實之蜘蛛類

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為害柑橘枝葉及果實之蜘蛛類害蟲有二種，即為柑橘紅蜘蛛 *Panonychus citri* (McGregor) 及黃蜘蛛 *Eotetranychus sexmaculatus* (Riley)。柑橘紅蜘蛛在本省之分布最為廣泛，並成為目下最嚴重之害蟲，且為今日防治柑橘害蟲成本中，佔最多之一項支出。黃蜘蛛幸未成災害，零星分布。茲將此兩種蜘蛛之形態，生活習性及防治試驗結果，報告於下，以供各方參考。

柑橘紅蜘蛛 *Panonychus citri* (McGregor)

異名：*Tetranychus mytilaspidis* Banks, *Paratetranychus mytilaspidis* Banks, *Paratetranychus citri* McGreger, *Metatetranychus citri* McGregor.

分布：除臺灣全省外，大陸之廣東、四川、日本南部、南非洲、美國等地。

形性：柑橘紅蜘蛛成蟲體背有顯明之突起，絨紅或絨紫色。玻片標本外方之尾外毛 (sacrals) 及尾內毛 (clunals) 等長，約為內方之尾內毛 (sacrals) 之1/3長，以別蘋果紅蜘蛛 *P. ulmi* (Koch)。寄主除柑橘外，尚食其他濶葉樹木。

卵紅色、稍扁、背面有一細膠質狀線，由此伸出放射狀線。卵期 8—30天，孵化後與成蟲一同食害葉片、果皮、嫩枝，發生點點蒼白斑點，並行 3 次脫皮而達成蟲。

第 1 齡幼蟲稱為幼蟲 (larva) 僅有足 3 對，經 2—3 天脫皮而為第 2 齡幼蟲，此齡幼蟲稱為(protonymph) 於此齡幼蟲起有足 4 對，再經 2—3 天後，又脫皮而為第 3 齡幼蟲，此齡幼蟲稱為 (deutonymph)，經 2—3 天後，又脫皮為成蟲。蟲口密度多時，植株全部除幹、枝外，變為蒼白色，並呈乾旱失水狀態，甚或發生嚴重之落葉或落果，促生新芽葉。此時新芽葉上，亦滿佈紅色蟲體，脫皮殼白色，再加飛塵，更顯不健康狀態。

雌蟲未待脫皮前，雄即伏息其旁，一旦羽化，立即與之交尾。交尾時雄在雌體之下，以別昆蟲類之交尾方式。交尾後每天產卵 2—3 粒。卵多產於葉之下面主脈兩側，沿葉柄尤以與枝條連接之部兩側為多。卵初產時紅色，有光，以後胚胎發育，色素集中一方，最後可透見其眼點及發育之幼蟲原形。

一雌可產卵30—40粒。成蟲壽命夏天18天左右。由卵至成蟲 21—35 天，一年可繁殖 12—15 代。密度最高時多在暮春及晚秋，尤以陣雨及颱風雨，可以減低密度至不成災程度。低溫並不影響紅蜘蛛之生活。柑橘種類中以檸檬，甜橙類被害最多，桶柑、椪柑次之，砧木用之酸橘為害亦烈。天敵以小黑瓢蟲 *Stethorus* sp. 為最主要，六點薊馬 *Scolothrips sexmaculatus* (Pergande)，作者雖見其捕食苎麻紅蜘蛛 *Tetarnychus telarius* (Linnaeus)，但未覩其捕食柑橘紅蜘蛛。

柑橘黃蜘蛛 *Eotetranychus sexmaculatus* (Riley)

異名：*Tetarnychus 6-maculatus* (Riley)

形性：柑橘黃蜘蛛體淡黃綠色，背之兩側有紫色素癒合成之六點，故有六點黃蜘蛛之稱。體

毛不如柑橘紅蜘蛛之長。並不由突起上伸出。體亦較狹小。

黃蜘蛛在柑橘葉之下面沿主脈或粗脈食害，食害之處變爲黃色，凹陷，並有絲網，以資保護其內面之蜘蛛及支持卵粒之用。卵粒多纏結於絲上。葉之正面被害部，相反的隆起，並爲光滑之黃色或黃白色之害狀。該處爲害嚴重時，葉片扭曲呈奇形，比正常之葉片早落，本省最初記載之材料爲由馬駿超先生採自柚子轉至 Baker, E. W. 和 Pritchard, A. E. 兩氏於定 (1955)。本種偶見爲害橙類，目下尚未成爲嚴重問題。

防治試驗

柑橘紅蜘蛛在未普遍應用新興殺蟲劑如馬拉松、固殺松等防治以前，未見成爲嚴重害蟲。本省最初引起注意之處爲臺東之夏橙，以後多爲種苗商經營之酸橘砧木，及已行嫁接之秋季苗木，現在桶柑、椪柑亦有成災，雪柑、夏橙則爲不可避免之柑橘紅蜘蛛爲害之最好對象。

過去運用之松脂合劑及石灰硫黃合劑，尤以後者亦有部份的防治柑橘紅蜘蛛效能，故柑橘紅蜘蛛不成爲嚴重問題。目下時過境遷，最初使用克氯苯防治，當時頗爲有效，現在多不採用，而以開路生、鐵定旺等防治之。

本試驗之目的，在乎探求目下常用之開路生、鐵定旺及新合成之莫樂殺得 Morocide、愛來得克死 Eradex 與常用於柑橘上之數種有機磷殺蟲劑對於柑橘紅蜘蛛之效應，以求今後防治該蟲之有所選擇。

本試驗於臺北縣木柵鄉荷泉農場舉行，品種爲雪柑，7年生。藥劑分殺蟎劑及有機磷殺蟲劑兩類。

殺蟎劑

殺蟎劑分20%鐵定旺 wp 0.02%，0.04%（×1000×500）18.5% 開路生 wp 0.0185%，0.037%（×1000，×500），25% 莫樂殺得 wp 0.025%，0.05%（×1000，×500）及50%愛來得克死 wp 0.05%，0.1%（×1000，×500）與對照等共計9個處理，於民國52年1月31日撒布，撒布後第7、14、28、49、68天（2月7日、14日、28日，3月21日及4月9日）取樣1次，每次每1處理任選5株，每株任採葉片5枚，共計25枚葉片，放入信封內，分別標記之，携回實驗室，放入冰箱內，以供隨時檢查。檢查時逐葉置於雙管放大鏡下，將葉之上下兩面上之成蟲、幼蟲、卵，分別記載之，如卵爲紅色，有光，並以解剖針刺破而有液體流出者爲健全卵，反之爲死。卵、成蟲及若蟲之足展開，身體飽滿者爲活，如肢足收縮，體軀乾燥者爲死。歷次檢查結果如圖1。

觀圖1所示，對照區成蟲至3月下旬密度亦形降低，幼蟲至4月上旬亦呈下降。鐵定旺處理區撒布後第7、14天，成蟲密度未見降低，幼蟲第7、14天密度亦不下降，第21天始見顯著減少。

開路生、莫樂殺得、愛來得克死之處理第7、14、21天不論幼蟲及成蟲，密度均顯然減少，但開路生0.0185%，莫樂殺得0.05%、愛來得克死0.05%三區撒布後第49天起，又行增多，而高濃度開路生0.037%、莫樂殺得0.1%、愛來得克死0.1%不論成蟲及幼蟲密度，均行顯著之減少。

由此可知各種殺蟎劑中，依此次實驗所示，鐵定旺效果很慢，至第21天後始行顯著，並高濃度及低濃度間，並無顯著差別，即0.02%與0.04%（×1000，×500）同樣有效。而開路生、莫樂殺得、愛來得克死均以高濃度爲持久。果爾如此，今後如選用鐵定旺防治柑橘紅蜘蛛，應於密度開始增高時使用並以低濃度爲宜，而開路生、莫樂殺得、愛來得克死以高濃度爲宜，撒布時期可比稍遲。於2月上旬舉行，尚可達防治目的。

有機磷殺蟲劑

此次所用之有機磷殺蟲劑有馬拉松、大利農、愛殺松(ethion)、大滅速、得力松(trithion)、盼死丹(pestan)、巴拉松、死迷松、殺噢丹(thiodan)等9種，試驗濃度均爲0.05%，連對照共計10個處理，於3月11日撒布，撒布後第7、21、29天各行取樣檢查1次，方法同殺螨劑試驗項，所得結果如圖2之AB。

觀圖2所示，撒布後第7、21、29天之柑橘紅蜘蛛密度、幼蟲項馬拉松、大利農、巴拉松、死迷松、殺噢丹等5處理，未見顯著減少，而愛殺松、大滅速、得力松、盼死丹4處理均行顯著減少。成蟲密度馬拉松、巴拉松、死迷速3處理第7、21、29天之密度亦未見顯著減少，顯示愛殺松、大滅速、得力松及盼死丹諸處理爲最佳。

觀乎此，防治柑橘紅蜘蛛，依此次實驗結果，馬拉松、大利農、巴拉松、死迷松、殺噢丹等均不可用，以後此區試驗園爲防治球粉介殼蟲，於5月23全部撒布0.05%大滅速防治，但不到1個月，柑橘紅蜘蛛又大行發生，乃於6月26日改用0.05%得力松全部防治之，直至全日（10月20日）柑橘紅蜘蛛仍在控制之下。

今後如欲防治柑橘紅蜘蛛，用有機磷劑防治，馬拉松、巴拉松、死迷速（防治其他柑橘害蟲另當別論）似不可靠，而以得力松、愛殺松較爲可靠，其防治效果，實不亞於上述之四種殺螨劑。至於得力松、愛殺松兼可防治昆蟲類之柑橘害蟲種類，有效濃度，撒布適期等等，有待今後之試驗。所考慮者得力松及愛殺松對於溫血動物之毒率較馬拉松爲高，但較爲廣用之固殺松則又低得多。

結　論

柑橘紅蜘蛛爲目下本省最嚴重之柑橘害蟲，20%鐵定旺 wp 0.01%（×1000）於柑橘紅蜘蛛密度開始增高時（北部二月初）採果後使用，似爲合理，18.5%開路生 wp 0.037%（×500）、30%莫樂殺得wp0.1%（×500）及50%愛來得克死wp0.1%（×500）於2月使用，似爲較宜。

有機磷殺蟲劑中，0.05%得力松、愛殺松亦有效力，可以採用防治。目下廣用之馬粒松、巴粒松、及新進口之死迷速均不能防治，似不宜採用。至於此等藥劑防治其他柑橘害蟲效能，則又當別論。至於得力松及愛殺松之對於其他柑橘害蟲之效果，尚待今後之試驗與觀察。

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Citrus Red Mite, **Panonychus citri** McGregor

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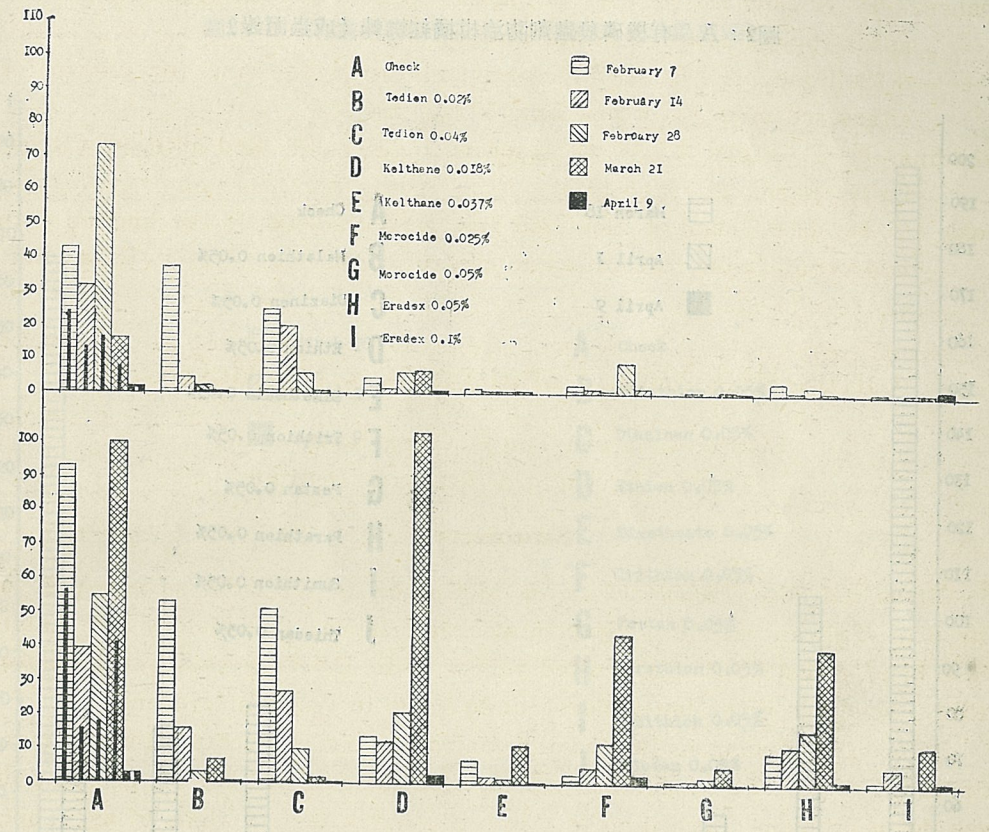
Summary

Citrus red mite *Panonychus citri* McGregor is the most severe pest of citrus in Taiwan recently. Specific characteristics, life history and habits were briefly described. Six spotted yellow mite *Eotetranychus sexmaculatus* (Riley) was also given but it does not so harm to citrus at present.

Before introducing malathion and controlling citrus insects with local manufactured resin soda wash, lime sulfur, and summer oil, the citrus red mite was not a problem. According to this preliminary test, 9 kinds of organophosphorous insecticides it showed that 0.05% of malathion, parathion, sumithion were not effective, however, 0.05% ethion, trithion, and pestan were very effective, they could suppress the mite population at unnoticeable level.

Acaricides 0.02% and 0.04% of tedion wp the most effective but the killing action was so slow and could be noticed 3 weeks after application, 0.037% kelthane, 0.05% morocide and 0.1% eradex were the quick action and noticed enough 1 week after application as did as ethion, trithion and pestan but the low concentrations were not effective.

圖1：殺螨劑防治柑橘紅蜘蛛（上成蟲記錄，下幼蟲記錄）



新入會會員名錄

會員證號碼	姓名	性別	年齡	籍貫	現任職務	通訊處
607	蘇建平	女	23	福建永定		砂拉越民都魯信箱三十五號
608	譚華雄	男	23	廣東臺山		香港九龍彌敦道515號三樓
609	彭仲墀	男	24	廣東寶安		北婆羅洲斗湖第152號信箱（Pang, T. C.）P. O. Box152 TAWAN North Borneo.
610	葉壽美	女	24	臺灣宜蘭	省檢驗局臨時人員	臺北市仁愛路三段廿四巷一弄一號之二
611	楊振德	男	29	臺灣臺南	省檢驗局技佐	臺北市中山南路5號
612	許洞慶	男	23	臺灣屏東	臺大植物病蟲害系	臺大昆蟲研究室

圖2：A 有機磷殺蟲劑防治柑橘紅蜘蛛（成蟲記錄）

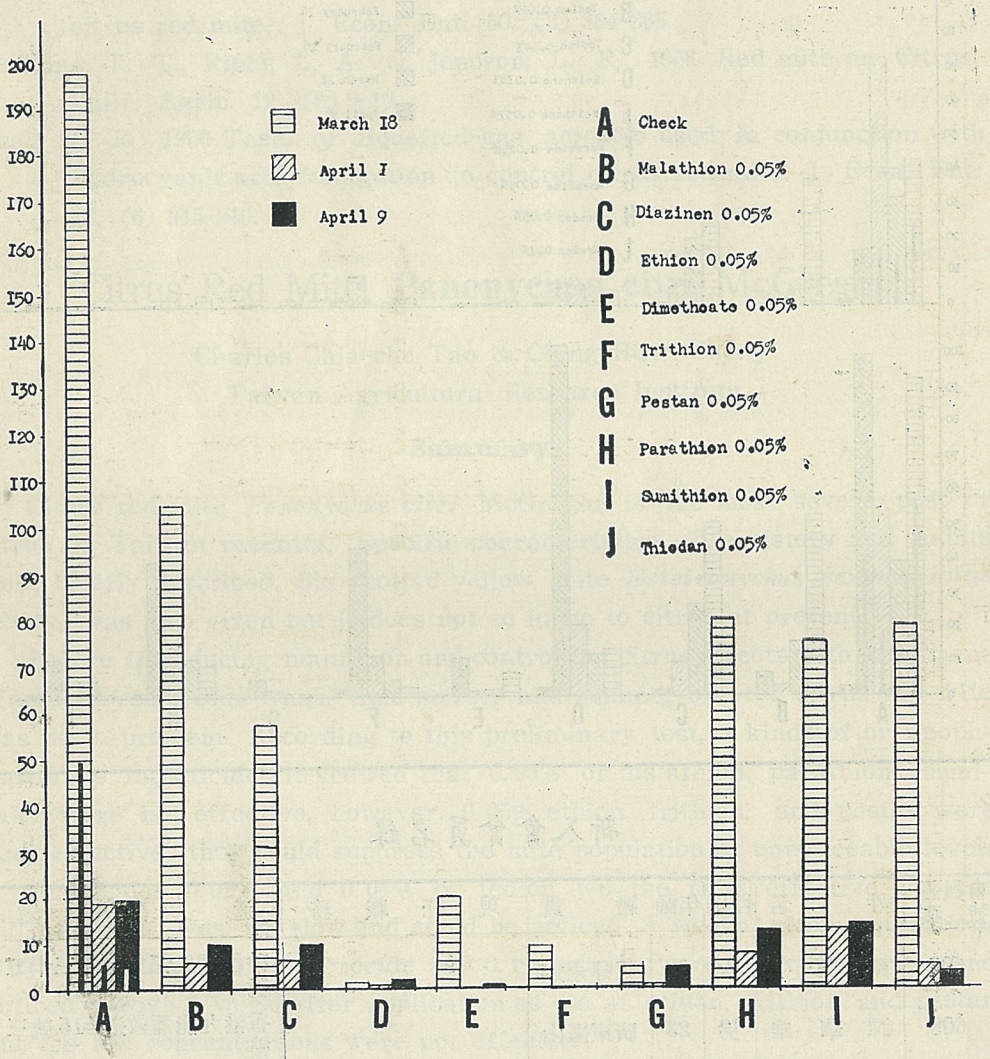


圖2：B 有機磷殺蟲劑防治柑橘紅蜘蛛（幼蟲記錄）

