

Field Evaluation of Different Application Frequencies of Extracts from Tubli Roots (*Derris elliptica*) against Diamondback Moth (*Plutella xylostella*) and Its Effect on Pechay (*Brassica rapa* L.)



Enrique E. Biñas Jr.

Agusan del Sur State College of Agriculture and Technology, PHILIPPINES

INTRODUCTION & AIM

- Pechay is popular as a main ingredient in cuisines
- The production has decreased over the years
- Infested by diamondback moth

- Diamondback moth is the most destructive insect pest in crucifers
- Developed resistance to insecticides

Wang, J., Zheng, X., Yuan, J., Wang, S., Xu, B., Wang, S., ... & Wu, Q. (2021). Insecticide resistance monitoring of the diamondback moth (Lepidoptera: Plutellidae) populations in China. *Journal of Economic Entomology*, 114(3), 1282-1290.

- *Derris elliptica* (tubli) can be used as an alternative insecticide
- Has a rotenone compound that can kill insects

Biñas Jr., E. E. (2021). A review on tubli plant used as organic pesticide: input toward sustainable agriculture. *Int. J. Res. Appl. Sci. Biotechnol.*, 8, 107-115.

- This study aimed to determine the effects of spraying frequency of tubli root extracts on DBM and the performance of pechay.

METHOD



Treatment code	Intervals (days)	No. of applications
T ₀	0	0
T ₁	3	7
T ₂	6	4
T ₃	9	3

(diluted to water @ 1:1)

1. Experimental area: 116 square meters
2. 3 replications with RCBD
3. 12 plots with 3 m x 2 m each
4. STAR



RESULTS & DISCUSSION

Table 2. Number of DBM/plant at 7, 14, 21, and 28 DAT after different application frequencies of tubli root extracts

Treatment	DAT			
	7	14	21	28
T ₀	3.96 ^b	2.23 ^b	2.13 ^b	0.56 ^c
T ₁	1.90 ^a	1.16 ^a	0.70 ^a	0.03 ^a
T ₂	2.50 ^a	0.96 ^a	0.83 ^a	0.23 ^b
T ₃	3.33 ^b	2.36 ^c	2.23 ^b	0.25 ^b
P-value	0.0023**	0.0009**	0.0004**	0.0017**
CV (%)	12.93	18.75	16.95	29.69

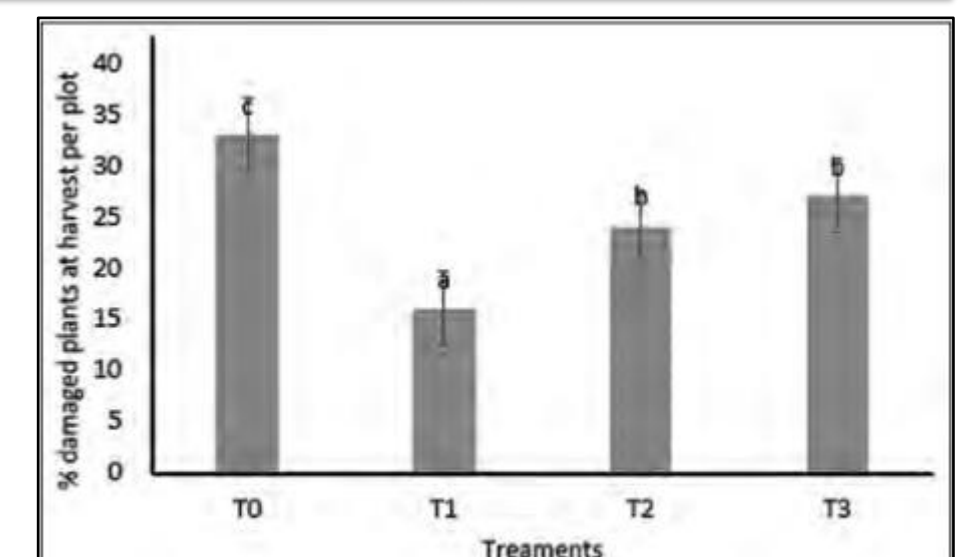


Fig. 1. Damage of pechay plants/plot by DBM at different application frequencies of tubli root extracts.

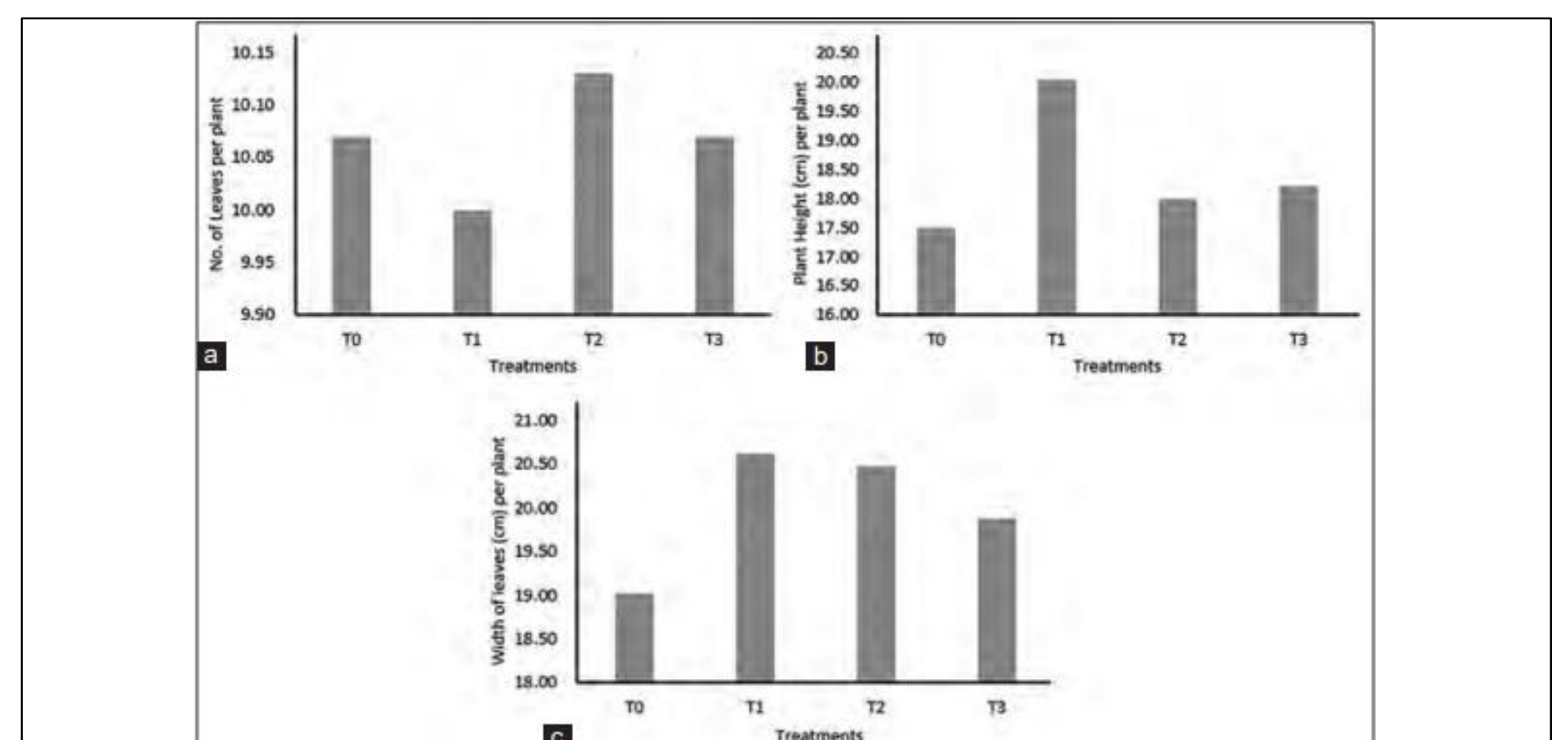


Fig. 2. Growth performance of pechay: (a) number of leaves per plant; (b) plant height (cm) per plant; (c) width of leaves (cm) per plant applied with tubli root extracts with different frequencies. *P-value > 0.5 – not significant.

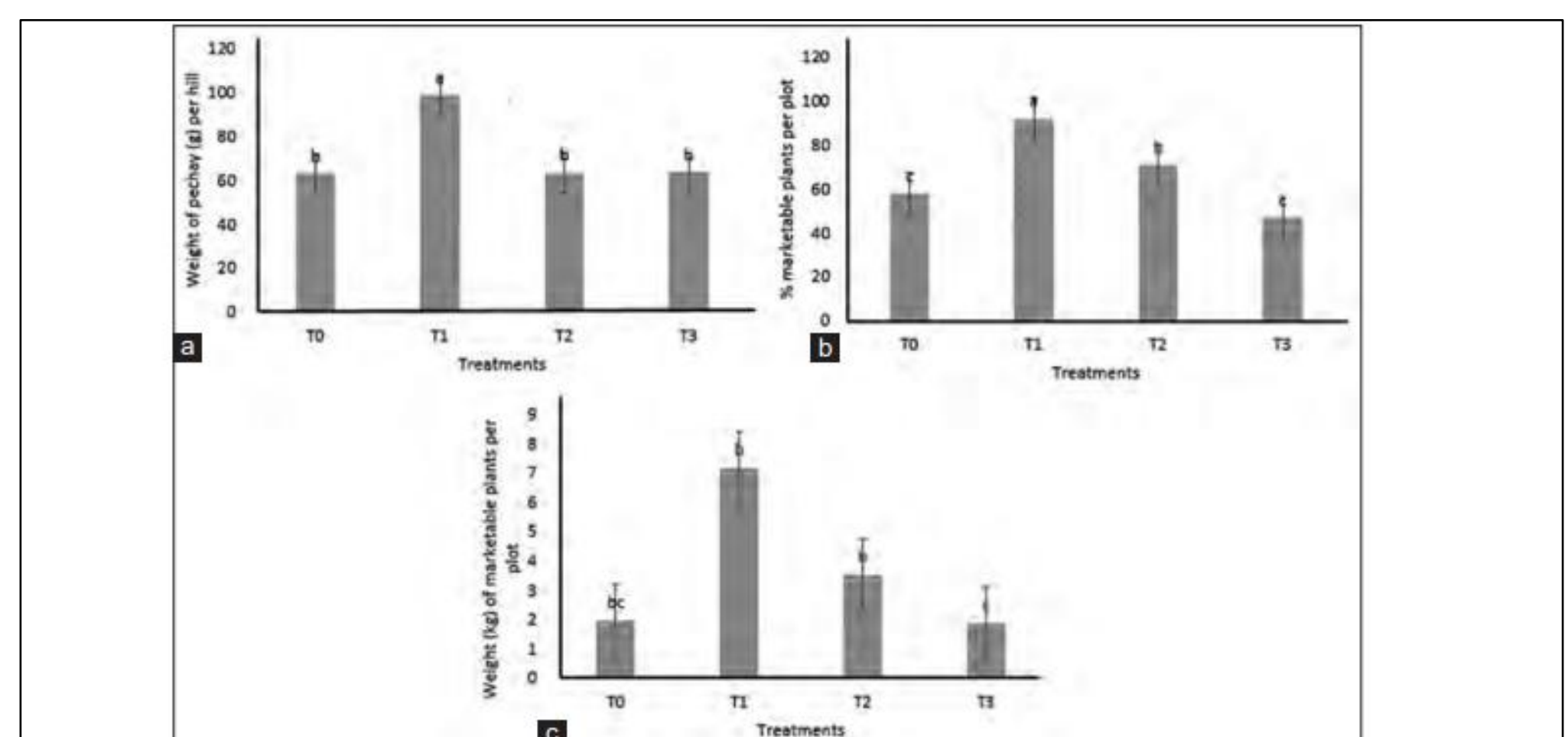


Fig. 3. Yield performance of pechay plants as affected by different applications of tubli root extract. (a) weight of pechay plant/hill (g); (b) marketable plants/plot (%); (c) weight of marketable plants/plot (kg).

CONCLUSION

Spraying tubli root extracts seven (7) times significantly lowers the DBM population and minimizes pechay damage. Hence, contributed to the favorable growth and yield performance of pechay compared to other spraying frequencies.

FUTURE WORK

- Use tubli root extracts as an alternative insecticide for pechay by spraying seven times at 3-day intervals.
- Preserve tubli as a source of rotenone for killing DBM.
- Commercialize tubli root extracts for worldwide dissemination of its effectiveness in controlling DBM.