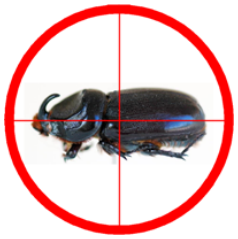
Research in Support of the Guam Coconut Rhinoceros Beetle Eradication Project



Rhodamine WT as a Tracer Dye to Quantify How Much SPLAT Attracticide is Picked Up by Adult Rhino Beetles During Brief Tarsal Contact

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Abstract

The purpose of this experiment is to determine if Rhodamine WT can be used as a fluorescent tracer dye for quantifying how much SPLAT-RB + cypermethrin attracticide is picked up by adult rhono beetles making brief tarsal contact with the product. Dye was washed off beetles which had made brief tarsal contact by walking over a substrate coated with the SPLAT attricide. Dye was on these beetles was washed of with tap water. Fluorometer readings of wash water from these beetles was more than 20 times higher than readings for wash water from beetles not exposed to the attracticide. This result indicates that fluorometry can be used to measure minute quantities of SPLAT attracticide picked up by brief contact between a beetle and the product.

Calibration

One percent (volume/mass) Rhodamine WT (5% stock solution) was added to SPLAT-RB + cypermethrin attracticide. A 31 mg sample of this was placed in a vial (#1) and 2 ml tap water was added. A 50% dilution series was made, resulting in 1 ml aliquots in vials numbered #2 through #6. An additional vial

(#0) was filled with tap water. Before reading with the fluorometer, 3 ml of tap water were added to each vial, making a total volume of 4 ml.

	vial	dyePPB	reading
1	0	0.00000	2.274
2	1	7631.70852	NA
3	2	953.96356	NA
4	3	476.98178	589.500
5	4	238.49089	180.100
6	5	119.24545	49.920
7	6	59.62272	7.309

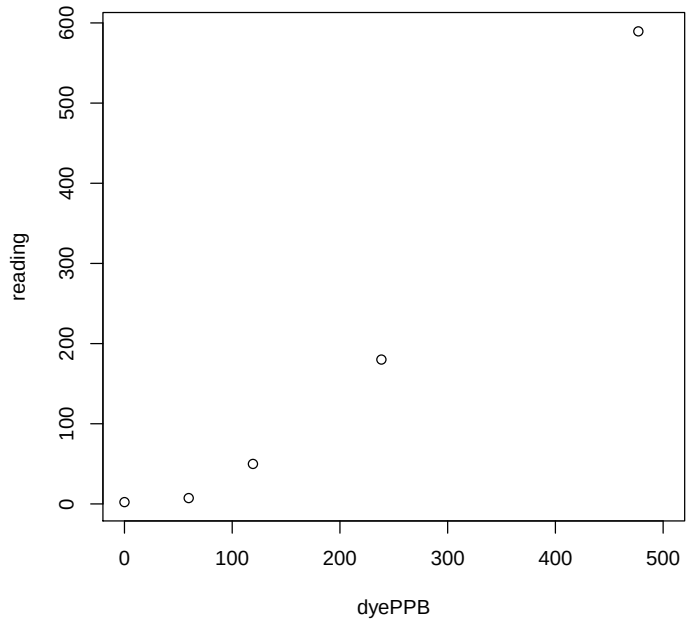

Figure 1: Fluorometer reading versus dye concentration.

Beetle Washes

Beetles 2 and 3 were held with tarsal contact to dyed SPLAT RB attracticide for 10 s. Beetles 7 through 9 were allowed to walk over a surface area coated

with non-dyed SPLAT RB. Beetles 4 through 6 and 10 through 12 were allowed to walk over an area coated with dyed SPLAT RB insecticide.

Each beetle was placed in a "pottle" and washed with x ml of tap water. One ml aliquots of the wash water was stored in vials numbered 2 through 12. Three ml of tap water was added to each vial before reading with the fluorometer.

	beetle	treatment	reading
1	2	dye 10 s	91.850
2	3	dye 10 s	147.300
3	4	dye walk	45.400
4	5	dye walk	42.610
5	6	dye walk	23.040
6	7	no dye	0.226
7	8	no dye	0.282
8	9	no dye	0.338
9	10	dye walk	21.510
10	11	dye walk	11.900
11	12	dye walk	7.943

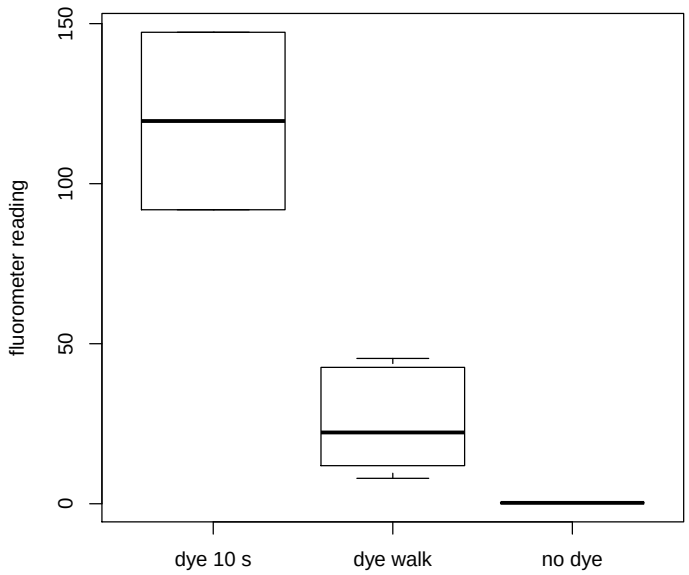

Figure 2: Fluorometer readings of beetle washes.