

USING NEEDS TO CONTROL WEEDS

Can Strawberry Guava, *Psidium cattleianum*, Leaves be Used for Weed Management in Hawai'i?

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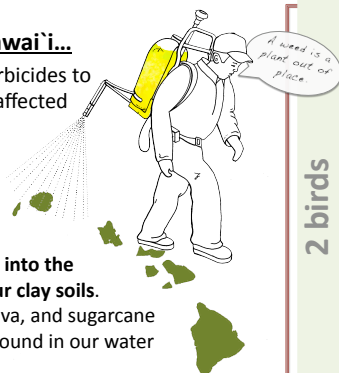
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CAN ONE STONE KILL TWO BIRDS?

Why herbicides are bad for Hawai'i...

Farmers are reliant on chemical herbicides to kill weeds. Kaua'i, Hawai'i is more affected by chemical application because:

- 1) Of our remote location.** Shipping of chemicals to the Hawaiian Islands tacks on a huge expense for farmers.
- 2) Chemical herbicides easily leach into the shallow water table and sit in our clay soils.** Residual left from pineapple, guava, and sugarcane plantations long ago can still be found in our water and soil.
- 3) There is no space for waste.** This is the end of the line for rubbish. No rubbish is shipped out. Disposal of packaging and shipping material takes up volume in the one landfill on island.
- 4) High rainfall and proximity to water sources.** Chemical run-off contaminates our streams, rivers, and the ocean around us.



TWO BIRDS, ONE STONE

Undesirable weeds are sprayed out with chemical herbicides, often the sole solution to weed control. This process is costly, unsustainable and environmentally unhealthy in our pristine, remote location of Hawai'i.

Strawberry guava is a horrible weed in Hawai'i. Trees may gain a competitive edge by releasing chemicals to inhibit the growth of neighboring plants.

Can strawberry guava, a weed which suppresses the growth of nearby plants, be used to control garden weeds?

What we noticed in our forests..

Loners. Strawberry guava grows alone. This dense, monotypic thicket of strawberry guava trees can be used to demonstrate chemical interference with other plant species in an outdoor classroom.



Bad neighbors. In a strawberry guava forest understory, few other species can be seen. Plant parts emit toxins to stunt, kill or inhibit germination of nearby plants and their seeds.



We tested it!

Using leaves of strawberry guava and hot water, we made a tea. We sprayed fallow fields with the tea or water to compare weed germination rates. We also chopped up the leaves of strawberry guava and incorporated them into potting soil with corn seeds to see if the leaves in soil affected corn growth. You can do this too!

What we found out..

Strawberry guava leaf tea reduced grassy weeds in field tests (see Fig. 1, above) and leaves in soil inhibited corn growth in greenhouse experiments. However further research is needed to test natural alternatives that can combat weeds easily and effectively. Allelopathic potentiality shows promise to be employed to moderate chemical application in agriculture. Students can help identify and test potential plants of importance. We can find a place for weeds.

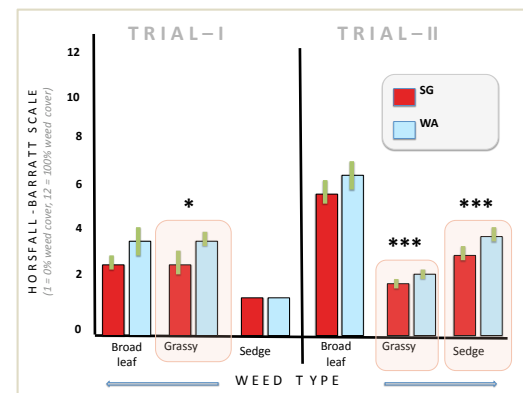


Fig. 1: Effects of strawberry guava (SG) compared to water (WA) on weed growth at three weeks after starting the field experiment. Significance differences highlighted in pink.