If You Can't Eat Them, Succeed Them!
Working with Weeds in the Tropics

by Kim Wilkinson and Craig Elevitch
AgroForester
PO Box 428, Holualoa, HI 96725 USA
Tel: 808-324-4427, Fax: 808-324-4129
http://www.agroforestry.net

How to get started in this thick mat of weedy trees? What to do about all the huge clumping grasses in the pineapple patch? How to manage this morning glory vine strangling the orchard? I have had a lot of questions come up in the course of working in permaculture in Hawai'i, for myself on my own projects and from people I meet who are working toward sustainability. Whenever I get myself into a muddle about how to handle weeds, I remember my weed motto: If You Can't Eat Them, Succeed Them!

The function of weeds on the farm
First of all, I have to keep in mind that if I am starting to worry about weeds, it is usually because the weeds are outrunning me, or running me over, on the road to farm improvement. After all, weeds take farm land in the same direction I want it to go: towards more diversity, resilience, and abundance. For example:

Weeds support diverse soil microlife
Soil microlife feeds off plants. The diversity of plants on the surface is directly related to the diversity of microflora in the soil. Weeds can contribute greatly to that diversity. Removal of weeds to bare the soil reduces diversity. It is very likely that there is important soil life or function being supported by some family of weed that has yet to be documented.

Weeds control erosion and conserve water
Bare ground loses moisture to the air on sunny days, and soil to erosion when it rains. A healthy groundcover of living plants will conserve moisture and prevent erosion, and weeds can be part of that groundcover.

Weeds provide insect habitat, and encourage birds
Butterflies, spiders, bees, dragonflies, praying mantis, ladybugs, and other insects need food and habitat to thrive. A variety of insects will also support birds. A healthy mix of insects encourages balance and reduces the chance of insect "problems."

Weeds are a source of food and medicine for people
Many plants that I used to think of as weeds are prized as nutrient-rich vegetables or medicinals all over the tropics. A few examples in Hawai'i (all escaped introduced species) include amaranth, portulaca, bitter melon, chayote, Spanish needle and gotu kola. Many of these tolerate drought or other harsh conditions far better than cultivated vegetables, and can be quite delicious.

Weeds provide food for crop plants
In the tropics, nutrients essential to crop plant health are primarily in organic matter, not bound up in the soil. Organic matter needs to cycle through the soil for nutrients to get to plants. Cutting weeds back and mulching plantings with them is a common practice with tropical farmers, and increases crop plant health. It is best to cut the weeds before they seed to keep the seeds from sprouting right next to the crop. Weeds also can be soaked in water in a covered container for about a week then fed to plants in a (smelly!) nutrient-rich liquid fertilizer tea.

Weeds are a source of food for animals
Animals can be integrated in the farm to do most of the weed resource management. For example, ducks are used for selective weed control, because they can often be trained as ducklings to develop a taste for some weeds, and will eat those first when allowed to range freely.

Succeed the weeds
So, having reminded myself that weeds are useful, particularly as food for soil life, people, animals, and plants, I can use them as a resource. But, what about when it looks like the weeds are eating the crop plants, and not the other way around? If I have a particularly vigorous weed enthusiastically encroaching on a plant I desire (for example, a bunch grass surrounding a young citrus tree and suppressing its growth), there is one thing I can do, short of abandoning my planting: play the weed's game. The name of the game is succession. I have to be more appropriate than the weed, and make the weed's job obsolete. In short, I succeed the weed.

The weeds are taking the land the same direction I want it to go, towards more diversity, stability, and abundance. It is counterproductive to focus on fighting weeds, since after all they have the land's best interest at heart. Besides, I can't win. They have been excelling in the process of succession for many more generations than I have.

In the natural process of succession, weeds establish where they find a place, usually in open or partially open conditions, especially on bare soil. They modify the environment, eventually making the area inhospitable (too shady, etc.) to more of their kind. Other plants come in who thrive in the modified conditions, and the process of succession continues until the ecosystem is more or less stable, usually culminating in a closed-canopy forest. Most of the plants that I call weeds are involved in the primary stages of natural succession. They are medicine for the soil, repairing it and revitalizing life.

Succeeding weeds is about stepping-up the process of succession. I don't try to stop or arrest the process the weed is involved in; I speed it up. For example, introducing fast-growing trees like nitrogen fixing trees can alter the environment, making groundlayer weed growth slow or even stop with shade. Filling the space with the trees and plants I want will leave less room for weeds. Some of the most aggressive weeds need full sun and low fertility to thrive; by increasing shade, organic matter and soil health they will disappear.

As a last resort, or in areas where the weeds are just too overwhelming, I may need to take a step back in the succession process. This may involve sheet mulching with a thick weed barrier once, baring the soil once, or even spraying herbicide to kill grasses one time. But I have to remember that this is a step back from the natural process of things, and the next step is the weed's turn. Unless I want to be involved in a tedious two-step (I remove weeds, they come back, I remove weeds, they come back) for the rest of my farming career, I need to take two steps forward *immediately* after taking the one step back. This means mulching and filling the space with appropriate plants (groundcovers, crop trees and other vegetation), creating a healthy system with no room and no need for voracious weeds to modify it. Using this approach in the case of the citrus tree, I

hand-pull, smother, or herbicide the bunch grass once, mulch the tree, then introduce a living groundcover vine to fill the area where the grass was encroaching. I could at the same time interplant with shade trees, as citrus like a little shade and grass does not. Farming in the tropics does not need to be a routine; it can be an evolution, an upward spiral. That is how I know I'm doing it right; when it is easier for me with each passing season.

Take the weed's lead

When choosing plants and methods to succeed the weeds, I take my cues of what is needed and wanted on the land from the weeds themselves. Weeds are experts in the process of succession, and great soil indicators as well, so I always look to them to learn what is appropriate. By imitating and accelerating what the weeds are doing, everyone succeeds.

References and further reading:

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Agroforestry Net, Inc.
PO Box 428
Holualoa, Hawaii 96725 USA
Contact us: email@agroforestry.net

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Page Last Updated: July 11, 2011