

TO KNOW THY SOIL, HEED THY WEEDS

• Weeds may be ugly. They obviously lack social skills, because they're always showing up where they're not wanted. But they are not dumb. They can communicate with each other and they can give us some clues about the general nature of our soil if we know how to listen.

Biodynamic farmer Ehrenfried E. Pfeiffer, author of *Weeds and What They Tell*, has classified weeds into three major groups according to the soil they thrive in—acid, hardpan or compacted soils. Five minor spots indicate sandy, salty, alkaline, limestone, and poorly drained soils.

***Acid Soil.** Cinquefoil, dock, hawkweed, horsetail, knapweed, lady's thumb sorrel.

***Hardpan or Compacted Soils.** Chamomile, field mustard, horse nettle, morning glory, pennycress, pineapple weed, quack grass.

***Disturbed or Cultivated Soils.** Amaranth, buttercup, carpet weed, chickweed, dandelion, horehound, lamb's-quarters, mallows, nettle, plantain, prickly lettuce, prostrate knotweed.

***Sandy Soil.** Asters, most goldenrods, yellow toadflax.

***Salty Soil.** Russian thistle, sea aster.

***Alkaline Soil.** Sagebrush, woody aster.

***Limestone.** Field madder, pennycress, peppercress and wormseed.

***Poor Drainage.** Hedge bindweed, Joe-Pye weed, meadow-pink, mild water pepper, smartweed, swampy horsetail, white avens.

Stuart Hill, a soil ecologist at the Macdonald campus of McGill University in Ste-Anne-de-Bellevue, Quebec, has made similar observations. For instance, if fertility is poor, deep rooted weeds—ragweed, daisy, mullein, Queen-Anne's-Lace, mugwort, dandelion, wild radish, and wild carrot—will thrive. "These weeds penetrate deep into the earth looking for nutrients," he told *Canadian Gardening*. "The dandelions, it means the soil on the surface lacks nutrients such as calcium. The solution is to improve fertility, not zap the lawn with herbicides."

Improving fertility doesn't mean a weedless plot. Healthier soil welcomes other messengers—hallow-rooted weeds like chickweed, chicory, common groundsel, and lamb's-quarters. "If these weeds start to appear in your garden after you've added humus and compost, it means the fertility is improving," Hill said.

Hill says weeds can also indicate what's missing in the soil. For example, a heavy growth of clover, vetch, or other leguminous weeds often indicates a soil deficient in nitrogen, at least under natural conditions. In his book *Designing and Maintaining Your Edible Landscape Naturally*, Robert Kourik observes: "Legumes also grow in nitrogen-rich soils, as you can prove by growing beans in your garden."

Legumes fall into a category of plants that accumulate a mineral even in soils that have a low concentration of that mineral. A second group of plants, Kourik writes, "thrive in soils with high concentrations of certain minerals or send their roots down to layers where the nutrients are in abundance. The concentration of minerals their tissues is related more to the

soil than to their powers as accumulators. These plants tolerate conditions in the soil that might be toxic to other plants."

Kourik compiled the following list of accumulator weeds from his own observations and those of other researchers. Grown in or around the landscape, these weeds can correct soil nutrient problems. Because plants hoard the substances they accumulate for the next generation, the weeds need to be tilled under at the end of the growing season:

***Boron.** Spurge.

***Calcium.** Chicory, coltfoot, corn chamomile, creeping thistle, dock, German chamomile, garden sorrel, horsetail, lamb's-quarters, plantain, purslane, redroot pigweed, sheep sorrel, shepherd's-purse, silverweed, stinging nettle, toadflax, watercress.

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***Cobalt.** Eastern bracken, horsetail, vetch.

***Copper.** Coltsfoot, dandelion, eastern bracken, plantain, purslane, silverweed, sow thistle, stinging nettle, vetch.

***Fluorine.** Garlic, watercress.

***Iodine.** Bladderwrack, burdock, Canada thistle, coltsfoot, creeping thistle, dandelion, devil-bit, dock, eastern bracken, nodding thistle, plantain, redroot pigweed, Russian thistle, stinging nettle, toadflax, watercress.

***Magnesium.** Bladderwrack, coltsfoot, dandelion, devil'sbit, horsetail, sow thistle, toadflax, watercress.

***Manganese.** Chickweed, eastern bracken, lamb's-quarters.

***Nitrogen.** Cattail, lamb's-quarters, stinging nettle.

***Phosphorus.** Chickweed, clover, dandelion, dock, eastern bracken, garden sorrel, garlic, German chamomile, lamb's-quarters, purslane, redroot pigweed, sheep sorrel, vetch, watercress.

***Potassium.** Chickweed, chicory, coltsfoot, corn chamomile, creeping thistle, dandelion, dock, eastern bracken, German chamomile, lamb's-quarters, plantain, redroot pigweed, silverweed, sow thistle, stinging nettle, tansy, vetch, watercress.

***Silica.** Dandelion, horsetail, plantain, valerian.

***Sodium.** Dandelion, garden sorrel, sheep sorrel, stinging nettle, shepherd's-purse, watercress.

***Sulfur.** Coltsfoot, garlic, plantain, shepherd's-purse, stinging nettle, watercress.

Before looking to your weeds as divining rods, remember that, in Kourik's words, "one individual plant says nothing." Others who have studied weeds and their relationships to the soil echo his observation that individual plants can grow in atypical situations and many species tolerate a wide range of soil conditions. If your weeds are sickly and undersized, they're probably not growing in a favorable habitat.

But healthy, lush plant communities-more than one plant of a single species along with other indicator plants-may be a useful signal of soil type, Kourik says. "It's pretty clear when you see a good stand of dock that the area gets flooded during the year," he says. "Basically, if you've got dock, don't plant your vegetables there." But weeds, he added, "can't replace a soil test."

Article seen in American Horticulturist, March 1993.

SETTING THE RECORD STRAIGHT

In February 1993 Thru The Green, the article on "An Exercise in Irrigation Programming" where the article is talking about reducing the total flow from the pump station by 312 GPM, the paragraph should read:


You should be able to accomplish this fairly easily by making sure that you never run a series of programs where all operating controllers will be activating two sprinklers at any given moment. This may be accomplished by activating greens and tees programs on some controllers while fairways and roughs are operating elsewhere on the course.

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