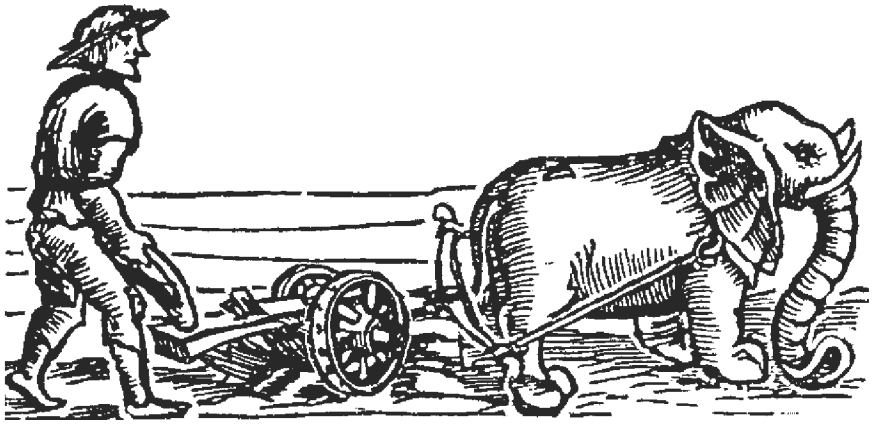

HEALTHY SOIL FOR COMMUNITY GARDENS

DAWN GIFFORD • CGR 2002

TO CREATE OPTIMAL CONDITIONS in our gardens, we must become good stewards of our soil. The good news is that soil is one natural resource we can protect and improve through thoughtful stewardship. The bad news is that, especially in cities, urban soil is subject to compaction, pollution, erosion, and stripping during construction and development. This downhill spiral of decay continues until the soil is virtually dead – impenetrable by air and water, and utterly incapable of supporting life. To keep your garden's soil healthy, and breathe new life into abused soil, take a holistic approach to soil care, to ensure a healthy, productive garden with a minimum of expense and work.

KNOW YOUR SOIL

Get to know your soil. By feeling, smelling, looking at and even tasting the soil, you can tell a lot. How far are roots able to penetrate? How easily can I put in a shovel? How many visible soil creatures can I see (worms, millipedes, etc)? Is my soil more clayey, or sandier? Soil tests are often available for free or very modest cost from Cooperative Extension (don't trust a 'do-it-yourself' home kit – they're not accurate). Take a soil sample according to directions, and send it in to the lab.

IMPROVE YOUR SOIL

Build your soil's fertility by adding organic matter, such as finished compost or manure. Regularly incorporate organic matter into the soil to improve its physical texture and feed soil life, which in turn feeds your plants. Try to leave the soil in better condition at the end of each season. In an ornamental garden, an inch of good compost a year works wonders. In intensively cultivated areas, such as the vegetable patch, the ideal is 2 inches of organic matter (or more) twice a year, gently tilled in.

Recycle nutrients back to the soil, so last season's yard and garden debris becomes next season's plant food. Compost all your plant and food residues. Save all your vegetable kitchen scraps, coffee grinds and eggshells for the compost pile. Every community garden needs a compost pile.

Mulching with organic materials, such as fallen leaves, woodchips from tree services and even lawn trimmings, also adds organic matter. An organic mulch behaves much like the natural soil building process in a forest. Experienced gardeners also adjust soil pH with limestone, and add fertilizers (preferably organic) to fix nutrient deficiencies found by a professional soil test.

WORK SOIL GENTLY

The less you rototill, the happier the beneficial creatures in the soil (for obvious reasons). Over-tilling destroys soil texture and creates a layer of hardpan impenetrable by air and water just below the depth of the tiller blade. Best practices include double-digging, sheet composting and minimal rototilling (limited to once or twice a year, only as needed).

Turning the soil over when digging mixes up soil layers, bringing poor hard subsoil up to the fertile topsoil level. Turning the soil over disrupts the habitat of soil fauna. Let loosened soil slide off the shovel into roughly the same position it came from.

Avoid working soil when it is too wet or too dry. Take a handful of soil from the garden and form it into a ball. If the ball breaks apart easily when gently bounced in the palm of your hand, the soil is ready to work. If the ball doesn't break apart, it is too wet. If you can't make a ball at all, it is too dry. The soil should also slide off your tools without sticking. Wait two to three days after a rain.

PRACTICE GOOD MANAGEMENT

Proper cropping practices greatly improve soil health and garden productivity. Best practices include cover cropping (a 'living mulch'), green manuring (a crop grown to be dug in to enrich the soil), compost cropping (growing crops specifically for the compost pile), and intercropping (planting more than one variety of crop and/or cover crop together).

Protect soil by planning plantings to keep soil covered at all times. Use the techniques above, plus succession planting (starting plants while others are still growing), and wide-row planting (Bio-intensive or Biodynamic-French intensive methods). Wide-row planting (which creates 'shade mulching') encourages healthy plant growth, good soil tilth and generous yields.

Prevent soil erosion and nutrient run-off, both major forms of water pollution. Mulching, composting and cover cropping all help control run-off. Well-designed physical barriers such as garden borders or riparian plantings are also beneficial. Ample organic matter – compost and humus – adds nutrient and helps to conserve water by holding it in the soil, where plants can use it. Mulching also helps with water conservation, and can cut water needs by half by restricting evaporation. Keep stored manures and compost covered with straw, cardboard or plastic to prevent the rain from leaching nutrients into run-off.

The coarser, darker and more aggregated the soil texture, the less likely it is to erode. So rototill less often, and use a spade and fork to loosen the soil. Don't walk on garden beds – compaction leads to many garden problems.

Avoid cultivating soils on steep slopes, construct terraces where appropriate. Keep soil in raised beds with solid sides, which can be made with a wide variety of materials, including inexpensive 'riprap' stone, cinderblock or recycled pavement rubble. (Don't use pressure treated wood ("CCA") for raised beds or garden structures. It has been treated with arsenic, cadmium and copper, all toxic metals that will get into your soil or onto your (or your children's) skin. "CCA" has been banned by the EPA, and alternatives without arsenic are available).

GO ORGANIC – AVOID TOXICS

Organic gardening offers tried-and-true ways to reduce or eliminate harmful chemicals in the garden, and thus in urban water and air.

Protect soil life from pesticides, herbicides, and other harmful chemicals, including de-icing salt. Use only calcium magnesium acetate (CMA), potassium chloride (KCl), or calcium chloride ($CaCl_2$) to melt winter ice. Urea, potassium nitrate (KNO_3), table salt and baking soda run off with spring rains, killing grass and other plants.

Many community gardens are located on vacant lots where there were once structures painted with lead paint, or which were used for illegal dumping or car repair. If this might have been true in your community garden, be sure to test your soil for lead and possibly for other toxins.

If there's a serious problem, you may need to build raised beds with clean topsoil brought in, or even consider using the site for another beneficial but non-gardening project.

SMART LAWN CARE

Leave grass clippings on lawns ("grass-cycling"). Clippings are a non-polluting, free source of nitrogen. Don't try to grow grass in heavy shade – it won't work. Instead, grow ground covers and shade-loving native plants to hold the soil and provide beauty. Apply lawn fertilizer carefully depending on your region and type of grass, Cooperative Extension can help with a fertilization calendar.

FERTILIZE MINDFULLY

Never over-apply fertilizers or exceed label directions. Substitute slow-release organic fertilizers for highly soluble "chemical" fertilizers. Whenever possible, utilize locally-available nutrient sources, such as composted livestock manure. To save money and prevent pollution, apply granular fertilizers by banding directly beside or underneath your planting hole or furrow, incorporating them into the soil, rather than tossing them over the whole garden. Cultivate and loosen your soil before applying fertilize – never apply granular fertilizers to hard, compacted soil. Sweep up prils (pellets) that land on streets and driveways.

GO NATIVE

Include native plants in borders, groundcovers and landscaping. Some natives, such as blueberries, serviceberry and edible cactus, shine as edible landscaping plants. Native plants have proved their adaptation to the climate in your particular region. They add beauty, a unique sense of place, and a home for beneficial insects.

WHY WASTE YOUR YARD 'WASTE'?

TRISHA FERRAND • JCG Summer 1989

I CALL IT HUMUS-CIDE: Burning or burying yard wastes is a crime. The average American generates more than a half ton of waste per year, and 20% to 40% of total waste is organic. During the leaf collection season, waste headed for the landfill or incinerator peaks at 30% or 40% above normal.

Traditional strategies of burying or burning yard wastes are both bad propositions. In a landfill, leaves break down and generate leachate and methane gas, making the landfill unstable and more expensive to manage. In incinerators, organic materials don't burn well because of their high moisture content.

Waste management costs have quadrupled in the last few years, the logical consequence of realizing waste facilities are not "free" holes in the ground. North America's largest waste hauling firm, Waste Management of North America, Inc., is developing yard waste composting programs at some of its largest landfills. The company is beginning to take a long-range view. Since construction of new facilities is expensive and difficult, waste management agencies want you to help conserve their resources (ie. landfill space.), just as your local electric company encourages energy conservation.

A composting facility is a bit like a small truck garden. Composting machines "cultivate" fields of compost, laid out in long neat windrows as much as 20 feet across and 10 feet high. Composting success depends on managing factors familiar to gardeners: pH, nitrogen, moisture, acidity, air flow and temperature. The harvest is dark humus-like compost that can be used as a soil amendment or mulch, or used to create other products.

In a way, it is a misnomer to call composting "waste management". Landfilling and incineration do waste valuable organic resources, but composting is truly a recycling system, returning organic matter to its natural purpose of restoring and enriching the soil.