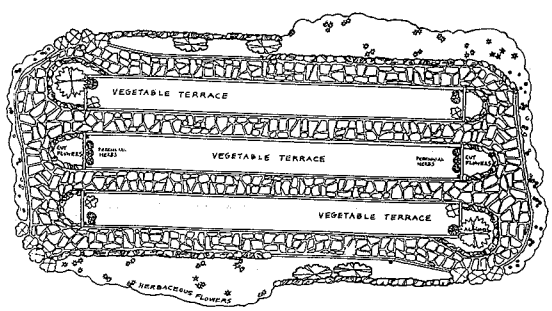
designing and maintaining

YOUR EDIBLE LANDSCAPE NATURALLY

by

Robert Kourik



Foreword by Rosalind Creasy

Edited by Mark Kane

Illustrations by Maia Massion

Additional illustrations by
Heidi Schmidt, Amie Hill, Linda Parker

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Figure 3.12

SOIL INDICATORS

Common Name	Botanical Name	Dry	Wet	Cultivated/Tilled	Uncultivated/Neglected	Low N	High N	Low K	High K	Low P	High P	Sand	Clay	Hardpan/Crusty	Acid	Alkaline	Low Fertility	High Fertility	Salty
Agrimony		X																	
Artemisia maritima	*Artemisia maritima*																		X
Aster, sea																			X
Aster, swamp			X																
Bellflower	*Campanula sp.*															X			
Bindweed, field	*Convolvulus arvensis*											X		X					
Bindweed, hedge	*Convolvulus sepium*		X																
Bracken, eastern	*Pteridium aquifolium*							X		X					X				
Buttercups	*Ranunculus acris*		X	X									X						
Buttercup, creeping	*Ranunculus repens*		X										X						
Campion	*Lychnis alba*															X			
Carpetweed	*Mollugo verticillata*			X															
Carrot, wild	*Daucus carota*				X							X				X	X		
Catchfly, night-flowering	*Silene noctiflora*	X																	
Cattail	*Typha latifolia*		X																
Celandine				X															
Chamomile, corn	*Anthemis arvensis*		X					X						X		X			
Chamomile, German	*Chamomilla pecutita*													X	X				
Chickweed	*Stellaria media*			X														X	
Chicory	*Cichorium intybus*			X									X					X	
Cinquefoil, silvery	*Potentilla argentea*	X													X				
Clovers	*Trifolium sp.*					X													
Clover, hop	*Medicago lupulina*															X			
Clover, rabbit foot		X									X				X				
Clover, red	*Trifolium protense*								X										
Clover, white	*Trifolium repens*	X			X														
Cockle, white	*Lychnis alba*											X							
Coltsfoot			X										X		X				
Cornflower	*Centaurea cyanus*											X							
Corn marigold												X			X				
Cotton grasses	*Eriophorum sp*		X																
Cudweed, low	*Gnaphalium sp.*		X																
Daisy, English	*Bellis perennis*												X		X				
Daisy, ox eye	*Chrysanthemum leucanthemum*		X		X														
Dandelion	*Taraxacum vulgare*			X									X		X				
Docks	*Rumex sp.*		X												X				
Dock, broad leaved	*Rumex obtusifoias*		X										X						
Fat hen	*Atriplex hastata*																	X	
Fingerleaf															X				
Foxtail, short awned	*Hordeum jubatum*		X																
Fumitory	*Fumaria officinalis*								X										
Goldenrods	*Solidago sp.*		X									X							
Goosefoot, oak leaved				X															
Grass, quack	*Agropyron repens*													X					
Groundsel	*Senecio vulgaris*			X														X	
Hawkweeds	*Hieracium sp.*														X				
Hedge-nettle, marsh			X																
Hellebore, false	*Veratrum californicum*		X																
Hemlock, poison	*Conium maculatum*		X																

continued

Figure 3.12 continued

SOIL INDICATORS

Common Name	Botanical Name	Dry	Wet	Cultivated/Tilled	Uncultivated/Neglected	Low N	High N	Low K	High K	Low P	High P	Sand	Clay	Hardpan/Crusty	Acid	Alkaline	Low Fertility	High Fertility	Salty
Henbane, black	*Hyscyamus niger*															X			
Henbit	*Camium amplexicaule*			X													X		
Horehound	*Marrubium vulgare*			X															
Horsenettle	*Solanum carolinense*			X			X					X							
Horsetails	*Equisetum sp.*		X										X		X				
Horsetail, field	*Equisetum arvense*		X									X							
Horsetail, marsh			X																
Joe-pye weed			X																
Knapweeds	*Centaurea nigra*								X						X				
Knawel	*Scleranthus annuus*														X				
Knotweed, prostrate	*Polygonum aviculare*			X											X				
Lady's thumb	*Polygonum periscaria*		X												X				
Lamb's quarters	*Chenopodium album*			X														X	
Lettuce, prickly	*Lactuca scariola*			X															
Lupine	*Lupinus sp.*					X													
Mallow, musk	*Malva moschata*			X															
Mare's tail	*Erigeron canadensis*		X																
Mayweed	*Anthemis cotula*											X			X				
Meadow sweet	*Astilbe sp.*		X																
Medic, black	*Medicago lupulina*					X													
Milkweed	*Asclepius syriaca*											X							
Mosses	*Bryophyta sp.*		X																
Mugwort	*Artemesia vulgaris*				X														
Mullein, common	*Verbascum sp.*				X										X		X		
Mustards	*Brassica sp.*												X	X					
Nettles, stinging	*Urtica urens*		X	X										X					
Pansy, wild	*Viola sp.*													X					
Parsnip, wild	*Sium suave*				X											X			
Peppergrass, field	*Cardaria draba*														X				
Pennycress	*Thlaspi arvense*												X		X				
Pigweed, prostrate	*Amaranthus retroflexus*	X																	
Pigweed, red root	*Amaranthus retroflexus*			X															
Pineapple weed	*Matricaria matricarioides*												X						
Pinks	*Dianthus sp.*				X														
Plantains	*Plantago sp.*		X	X								X		X					
Radish, wild	*Rapranus raphanistrum*				X									X		X			
Ragwort, tansy	*Senecio jacobaea*		X																
Rape	*Brassica hapus*				X														
Rape, bird													X						
Redshank	*Polygonum periscaria*		X																
Robin, ragged			X																
Rose family	*Rosa* sp.				X														
Rushes			X																
Salad burnet	*Poterium sanguisorba*														X				
Salep															X				
Scarlet Pimpernel	*Anagallis arvensis*														X				
Sea Plantain																		X	
Sedges	*Cyperaceae sp.*		X																
Shepherd's purse	*Capsella bursa-pastoris*										X							X	

continued

continued

SOIL INDICATORS

Common Name	Botanical Name	Dry	Wet	Cultivated/Tilled	Uncultivated/Neglected	Low N	High N	Low K	High K	Low P	High P	Sand	Clay	Hardpan/Crusty	Acid	Alkaline	Low Fertility	High Fertility	Salty
Silverweed			X																
Smartweeds	*Polyogonum scabrum*		X																
Sorrel, garden	*Rumex sp.*		X												X				
Sorrel, sheep	*Rumex acetosella*											X			X				
Sow thistle	*Sonchus arvensis*												X		X				
Speedwell	*Veronica sp.*	X		X															
Spruge, leafy	*Euphorbia esula*	X																	
Spurges	*Euphorbia sp.*			X															
Spurry, corn	*Spergula arvensis*											X			X				
Stinkweed	*Thlaspi arvense*													X		X			
Strawberry, wild	*Fragaria sp.*														X				
Sundews															X				
Thistle, Canada	*Cirsium arvense*												X						
Thistle, nodding	*Carduus nutans*															X			
Thistle, Russian	*Salsola pestifer*	X																	X
Toadflax	*Linaria vulgaris*												X						
Vetches	*Vicia sp.*					X													
Water hemlock, spotted	*Cicuta maculata*		X																
Watercress	*Nasturtium officinale*		X																
Willow, black	*Salix sp.*		X																
Wormwood, biennial	*Artemisia biennis*				X				X								X		
Yarrow	*Achilea millefolium*							X											

Figure 3.12 For sources of information, see footnotes at bottom of Figure 17.4, page 270.

The plants listed in the Cultivated/Tilled column are rapid invaders of freshly aerated soil. Though open soil usually indicates high fertility, remember that there are also heavy, fertile soils. Double-check fertility with other indicators. A tilled soil does not always mean good tilth. For the best indication of tilth, use the columns labeled clay, sand, and hardpan.

Some plant indicators reveal good places to garden. If you see chickweed (*Stellaria media*) on your property, rejoice. It is a very good indicator of loamy, fertile soils.

If there are any severe nutrient deficiencies in your soil, they will be revealed by discolored leaves. I do not often see a yard where the plants show visible symptoms of severe mineral deficiency. In such cases, a soil sample, or a leaf tissue sample, can distinguish the problem. Or simply use plenty of compost and organic matter to amend the soil. Compost is a great buffer. In general, it corrects nutrient deficiencies with less fuss than using a soil test and following its recommendations.

Develop Your Own List

Information based on personal experience often varies considerably from person to person. For example, in my area a local apple grower is almost proud of the red-stem filaree (*Erodium cicutarium*) in his orchard. "It means a rich soil," he says. I believe, however, that filaree is more indicative of tilled or disturbed soils than of fertility. Sarah Kidd, a local expert horticulturist, uses filaree as a *relative* indicator of fertility. In poor soils, filaree grows only a few inches tall, while in rich soils it can be over two feet tall. If you know reliable plant indicators that are not on this list, I would appreciate hearing from you.

pH Analysis

The range of pH tolerance of many food crops is rather narrow, and small changes in the soil will have rather dramatic effects upon which crops will grow well. Since plant indicators may be unreliable in a highly acidic or alkaline setting, use a soil test to check pH for critical crops, especially when

Fig. 17.4

DYNAMIC ACCUMULATORS

Name	Botanical Name	Sodium	Iodine	Flourine	Boron	Silica	Sulfur	Nitrogen	Magnesium	Calcium	Potassium	Phosphorus	Manganese	Iron	Copper	Cobalt
Alfalfa	*Medicago sativa*							X						X		
Arrowroot										X						
Bladderwrack			X						X					X		
Borage	*Borago officinalis*					X					X					
Bracken, eastern	*Pteridium aquifolium*										X	X	X	X	X	X
Bridal bower												X				
Broom drops									X							
Buckwheat	*Fagopyrum esculentums*											X				
Burdock	*Arctium minus*													X		
Calamus							X				X	X				
Caragreen		X					X			X						
Caraway	*Carum carvi*											X				
Carrot leaves	*Daucus carota*								X		X					
Cattail	*Typha latifolia*							X								
Century											X					
Chamomile, corn	*Anthemis arvensis*									X	X					
Chamomile, German	*Chamomilla recutita*									X	X	X				
Chickweed	*Stellaria media*										X	X	X			
Chicory	*Cichorium intybus*									X	X					
Chives	*Allium sp.*	X								X						
Cleavers	*Galium aparine*	X								X						
Clovers	*Trifolium sp.*							X				X				
Clover, hop	*Medicago lupulina*							X				X				
Clover, rabbit foot								X				X				
Clover, red	*Trifolium protense*							X				X				
Clover, white	*Trifolium repens*							X				X				
Coltsfoot							X		X	X	X			X	X	
Comfrey	*Symphytum officinale*					X		X	X	X	X			X		
Dandelion	*Taraxacum vulgare*	X				X			X	X	X	X		X	X	
Devil's bit	*Veratrum californicum*		X						X					X		
Docks	*Rumex sp.*									X	X	X		X		
Dock, broad leaved	*Rumex obtusifolias*									X	X	X		X		
Dulse		X	X						X	X				X		
Eyebright	*Anagallis arvensis*						X				X					
Fat hen	*Atriplex hastata*									X				X		
Fennel	*Foeniculum vulgare*	X					X				X					
Flax, seed	*Linum usitatissimum*									X						
Garlic	*Allium sativum*			X			X					X				
Groundsel	*Senecio vulgaris*													X		
Horsetails	*Equisetum sp.*					X			X	X				X		X
Horsetail, field	*Equisetum arvense*					X			X	X				X		X
Horsetail, marsh						X			X	X				X		X
Iceland moss			X													
Irish moss														X		
Kelp		X	X					X	X	X				X		
Lamb's quarters	*Chenopodium album*							X		X	X	X	X			
Lemon Balm	*Melissa officinalis*												X			
Licorice root, leaves								X					X			
Lupine	*Lupinus sp.*							X					X			
Marigold, flowers	*Tagetes sp.*												X			
Meadow sweet	*Astilbe sp.*	X					X		X	X		X		X		

continued

continued

DYNAMIC ACCUMULATORS

Name	Botanical Name	Sodium	Iodine	Flourine	Boron	Silica	Sulfur	Nitrogen	Magnesium	Calcium	Potassium	Phosphorus	Manganese	Iron	Copper	Cobalt
Mistletoe									X							
Mullein, common	*Verbascum sp.*						X		X		X			X		
Mustards	*Brassica sp.*						X					X				
Nettles, stinging	*Urtica urens*	X					X	X		X	X			X	X	
Oak, bark	*Quercus sp.*										X					
Oat Straw						X										
Parsley									X	X	X			X		
Peppermint	*Mentha piperita*								X		X					
Pigweed, red root	*Amaranthus retroflexus*									X	X	X		X		
Plantains	*Plantago sp.*					X	X			X	X			X	X	
Primrose	*Oenothera biennis*								X							
Purslane	*Portulaca oleracea*									X		X		X		
Rest harrow		X					X		X	X				X		
Salad burnet	*Poterium sanguisorba*													X		
Sanicle											X					
Sarsparilla			X													
Savory	*Satureja sp.*											X				
Scarlet Pimpernel	*Anagallis arvensis*									X						
Shepherd's purse	*Capsella bursa-pastoris*	X					X			X						
Silverweed										X	X				X	
Skunk cabbage	*Navarretia squarrosa*								X							
Sorrel, garden	*Rumex sp.*	X								X		X				
Sorrel, sheep	*Rumex acetosella*	X								X		X				
Sow thistle	*Sonchus arvensis*								X		X				X	
Spurges	*Euphorbia sp.*				X											
Strawberry, leaves	*Fragaria sp.*													X		
Tansy	*Tanacetum vulgare*										X					
Thistle, Canada	*Cirsium arvense*													X		
Thistle, creeping	*Sonchus arvensis*									X	X			X		
Thistle, nodding	*Carduus nutans*													X		
Thistle, Russian	*Salsola pestifer*													X		
Toadflax	*Linaria vulgaris*								X	X				X		
Tobacco, stems/stalk	*Nicotiana sp.*							X								
Valerian	*Valeriana officinalis*					X										
Vetches	*Vicia sp.*							X			X	X			X	X
Watercress	*Nasturtium officinale*	X		X			X		X	X	X	X		X		
Waywort		X					X				X					
Willow, bark	*Salix sp.*								X							
Willow, black	*Salix sp.*	X														
Wintergreen	*Gaultheria procumbens*								X							
Yarrow	*Achilea millefolium*							X			X	X			X	

The above data are from the following sources:

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Rateaver, Gargyla and Gylver. *The Organic Method Primer.* Pauma Valley, CA: B. and G. Rateaver, 1973.

Additional citations in numerous scientific journals were graciously provided by Ron Whitehurst, horticultural author and consultant.

Figure 17.4

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McLeod, Edwin. **Feed the Soil.** Graton, CA: Organic Agriculture Research Institute, 1982. A basic review of nitrogen-fixing plants and cover crops, with an encyclopedic reference. I dislike the opening dialog between rabbits and a worm, but I use the encyclopedia frequently.

Rateaver, Bargyla and Gylver. **The Organic Method Primer.** Pauma Valley, CA: Bargyla and Gylver Rateaver, 1973. The first good reference for patterning organic gardening after nature's dynamics. A true classic of organic gardening, though some of the sources remain obscure. Out of print; look for a used copy.

Turner, Newman. **Fertility Pastures.** 2nd ed. rev. Pauma Valley, CA: Bargyla and Gylver Rateaver, 1975. My favorite book on plants as indicators of soil fertility and plants as soil improvers in cover crops and herbal leys. Written for dairy farmers, but much of the information relates to edible landscaping, as well.

U.S.D.A. **Soils & Men: Yearbook of Agriculture 1938.** Washington, DC: U.S. Dept. of Agriculture, 1938. This rare volume was written before chemical fertilizers had an iron grip on commercial agriculture and when farmers still grew most of their own fertilizers. An excellent review of soil preserving and soil building techniques. Includes William Albrecht's best paper on nitrogen fixing and green manures, *Loss of Soil Organic Matter and Its Restoration.*

Walters, Charles, Jr., and Fenzau, C.J. **an Acres U.S.A. Primer.** Raytown, MO: Acres, U.S.A., 1979. A long-winded but interesting survey of a genre of organic farming found throughout the Midwest. Though some of their conclusions are hard to accept, these farmers get good results and yields.