



Speaker Notes 101 Ways to Make Your Garden More Eco-Friendly

Carver/Scott County Extension Master Gardeners 2017

Slide No Here is a list of some, certainly not all, ways to make your garden more eco-friendly. Many of these subjects could have their own presentations but there isn't enough time. Therefore, this handout has lots of references. Identify a few ideas ideas you are willing to try. Look into some other ideas.

1		Intro
2		
3		Green, sustainable, eco-friendly, ecoscaping, naturscaping - just vocabulary for same thing
4		Commit to change 3 things!
	Tip #	Idea
5	1	Grow less lawn, add hardscape and other kinds of gardens. Lawns require fertilizers, herbicides, mowing and watering.
6		EPA says we use 800 million gallons of gasoline 90 million pounds of pesticides each year plus 56,000 galons of water on an average lawn
7		Patios, decks, gardens - anything that is not lawn
8	2	Eliminate turf in hard to grow areas like under trees, dry slopes, high traffic areas
9	3	Landscape hills - problem to mow and they often dry out quickly.
10		Hill example
11	4	Have no lawn: gravel, mulch, astroturf, perennials, prairie grasses, etc. (California with their drought is using astroturf in some areas, banned in others as sit is a petrochemical. Always a balancing act.)
12		Shade perennial garden
13		Sun perennial garden
14		Prairie style no lawn
15	5	Adjust sprinklers whether you have an irrigation system or hand placed sprinklers.
16	6	Conduct an Irrigation Audit. Lawns need about 1" of water per week. Use catch cans, or tuna cans, to see how much time is needed to get 1 inch of water per week.
17		Pay to have one done by your irrigation company, buy catch cans and do your own, or use tuna cans
18		Tuna cans make good timers of their own with manual sprinklers.
19	7	Install Rain Sensors on your irrigation system, but also pay attention to weather forecasts and turn off sprinklers if rain predicted. For a low tech system, use a rain gage and stop watering .
20	8	Water more slowly on hillsides to avoid runoff. Sand absorbs more than clay.
21	9	Water in the morning between 4:00 and 8:00 a.m. Night watering can generate disease, day time watering wastes water and can boil some plants.
22	10	Water soil not plants. Saves water and decreases disease.
23	11	Install rainbarrels to capture roof runoff. Although the science does not show a problem like ecoli, many people prefer to use this water on ornamentals rather than vegetable plants because of pollutants that may wash off the roof, mold that may be in the barrel, etc.
24	12	Use soaker hoses or drip irrigation. 90 percent efficient vs 40-50 for sprinklers. Puts the water right where you need it without wetting the leaves.

25		Drip irrigation example
26	13	Use Ollas, buried ceramic jars, that leak water to plants roots only.
27	14	Wick watering also puts water just where you want it.
28	15	Think beyond the sprinkler. Water in the air does no good. Bottom line - there are a lot of possible technological ideas to conserve water - try them!
29	16	Water less frequently, more deeply for longer, deeper roots and less water dependence.
30	17	Aerate your lawn. Allows water, oxygen and nutrients to get into soil for deeper root development.
31	18	Xeriscape. Use drought resistant plants. <u>The Best Plants for 30 Tough Sites</u> , edited by Mary Meyer available as a book or on line at http://www.extension.umn.edu/garden/yard-garden/landscaping/best-plants-for-tough-sites/ , http://www.arboretum.umn.edu/droughttolerantplants.aspx
32		This book is available to purchase or - it is on line, anytime, for FREE!
33	19	Identify water problem areas like the south and west exposures. Plant something else there.
34	20	Use native plants. They are adapted to our climate, temperatures, insects, droughts, etc. Prairie plants have deep roots and can survive long droughts. Minnesota is in zone 4b. References: https://www.extension.umn.edu/garden/yard-garden/landscaping/native-plants-for-sustainable-landscapes/doc/7447z.pdf , http://dnr.state.mn.us/gardens/nativeplants/index.html , <u>Landscaping with Native Plants of Minnesota</u> by Lynn M. Steiner
35		This slide shows why prairie plants are drought tolerant. On left Kentucky blue grass
36		U of M plant list - on handout
37		DNR Plant list - on handout
38		One book - are many more - just watch for growing zone.
39	21	Put the right plant in the right place. It will need less water, less fertilizer, less insecticide, and less care.
40		Example - Roses that need to be tipped and protected. U of M has worked on getting roses that work well here without that kind of care. Try Northern Accent - Sven, Ole and Lena
41	22	Clean your storm drain. Leaves and all add too much phosphorous and nitrogen to our lakes.
	23	Adopt a Storm Drain, get a free lawn sign! Many cities, like Prior Lake, have formal programs for this.
43	24	Mow high, mow frequently, 2-3 inches is recommended.
44		Need less water, smothers out weeds for less herbicide and allows you to leave clippings on lawn (tip 25)
45	25	Leave grass clippings on lawns. If under 1 inch, clippings fall down and decompose rapidly putting nutrients back into the lawn. You may have to mow more often.
46		When too long they won't fall down and decompose.
47	26	Keep clippings on lawn, not in street.
48	27	Learn good bugs from bad bugs. Many insects are beneficial and eat other pests. Know what you have before you decide to kill it. References: <u>Insects of the North Woods</u> , by Jeffrey Hahn. http://www.extension.umn.edu/garden/insects/
49	28	Hand pick insects. Yes, it is disgusting, but it is efficient for many pests.
50		Use pail of soapy water for things like Japanese Beetles on roses (but not for your Linden tree!)
51	29	Put up with cosmetic damage.
52	30	Preventing of suppressing damaging pests by biological, physical, cultural and chemical methods with the least possible hazard to people ,property or the environment

53		Simply - think before you spray.
54		Follow Integrated Pest Management principles. Look at the whole system to remedy plant diseases, pests, or problems. Is it the right plant for the location? Does it have good light, water and air circulation? Proper sanitation? Is there a biological solution or a physical solution (like row covers). If a chemical solution is necessary, what is the lowest impact possible? This download is a good explanation for home gardeners: https://store.extension.iastate.edu/Product/rg201-pdf
	31	Sanitation. Remove insect infested plants, diseased plants, rotten fruit, etc. to reduce exposure.
	32	Rotate crops as some pathogens overwinter in the soil. Important for tomato/potato (learn vegetable families) http://hort.uwex.edu/articles/using-crop-rotation-home-vegetable-garden-0/
	33	Don't crowd. Air helps keep plants pest and disease free.
	34	When using any garden chemicals, read the label . Will it work for your particular DISEASE or INSECT? Will it work on that PLANT? Look at safety, especially for food. What about harm to pets, bees and other beneficial insects?
59	35	After reading the label, follow the instructions! It is a violation of Federal law to mis-use pesticides.
60	36	Use insecticidal soap for small soft bodied insects. Considered "non-toxic" but actually can be harmful to bees. (Many recipes on line. Requires true soap with fatty acids . Recipe from University of Hawaii: 1Tbs mild dishwashing soap (real soap, not detergent), 1C vegetable oil mixed. Take 1-2 Tbs of the concentrate to a cup of water and spray on plants.)
61		Note - Can't see details of chart but point out that even "organic" insecticides like insecticidal soap can be highly toxic to bees.
	37	Water works to get rid of aphids.
	38	"Organic" does not always mean safe. Some are more toxic than synthetic chemicals. These are some common chemicals used in organic gardening - considered safer. OMRI = Organic Materials Research Institute. Just that label does not mean safe. Ex: Neem Oil - banned in Great Britain!
64		Example - some "organic" chemicals are more toxic than synthetics.
65	39	Be skeptical with the internet, Facebook posts, etc. (Yes, fire and boiling water can kill plants, but they may not kill the root it may return.)
66		Household vinegar is not as strong as herbicidal vinegar.
67		Salt kills plants, but may stay in the soil.
68	40	Look for research based information. ".edu" in web address. Start your Google search with site:.edu and then your search term. (example site:.edu neem oil) Never trust a site that is selling something.
	41	Compost kitchen scraps and garden waste. Improves your soil and adds nutrients. http://www.extension.umn.edu/garden/yard-garden/soils/composting-and-mulching-guide/
70		No pet waste (carnivores) Can harbor disease and most home sites do not get hot enough to kill pathogens
	42	Direct composting is put in a hole or a trench, covered and left. Toss out your coffee grounds.
72		Coffee grounds.
73	43	Vermicompost involves using worms in plastic tubs to eat and digest food scraps. https://content.ces.ncsu.edu/worms-can-recycle-your-garbage

74		Fancy layered plastic containers, do not overwinter outside
75	44	Use your local yard waste compost sites. Some trash haulers will pick it up, others have drop off locations. State law bans yard waste from garbage collection and disposal in landfills.
76	45	Support municipal organics composting for things like meat, bread, dairy products, food papers, facial tissue, paper plates, etc. as being done in many cities.
77	46	Garden pots can be recycled. Check with your trash hauler. Some nurseries will take them back.
78	47	Use mulch. It retains moisture, controls weeds, and maintains a more consistent soil temperature. Do not put plastic sheets under mulch. Landscape fabric can be used under rock mulch. Organic mulch needs nothing. It rots and amends the soil.
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80	48	Use groundcovers for living mulch. http://www.extension.umn.edu/garden/landscaping/maint/ground_covers http://www.extension.umn.edu/garden/yard-garden/landscaping/ground-covers-for-rough-sites
81	49	Raingardens keep stormwater runoff from entering the sewer system, lakes, and rivers. Specifically chosen plants purify the water and let it return to groundwater. They do not breed mosquitos. Curb cuts add street runoff to the raingarden. http://blog-yard-garden-news.extension.umn.edu/2009/05/rain-gardens.html , http://www.blue-thumb.org/
82		Example of cutting runoff to Crystal Lake in burnsville.
83		Curb cuts for street run off. Also done in Minnehaha creek and other watershed areas.
84	50	Dig or smother weeds.
85		Pull by hand
86	51	Smother weeds. Lasagna method uses layers of newspaper or cardboard (which will decompose) under mulch. Need many layers - up to 1/2 inch. Then cover with several inches of mulch or compost, or soil depending on your purpose. Kills weedy patches or excess lawn.
87		Example photo
88	52	Instead of black plastic edging, try an English edge with lasagna newspaper. Easy to expand when you eliminate more lawn.
89		Example photo
90		Finished edge one year later - still holds up.
91	53	To kill some weeds chemicals may be necessary. Example: Japanese knotweed. The arboretum prefers to use chemicals for buckthorn eradication as it doesn't tear up the soil and create environments for other invasives like garlic mustard.
92	54	Cover crops, or green manure, hold the dirt, keep out weeds, and can be turned over into the garden as organic matter in the spring. http://www.extension.umn.edu/garden/yard-garden/vegetables/green-manure-cover-crops-for-minnesota/
93		Clover, rye, vetch
94	55	Start your own seeds. Greater variety of vegetables and flowers plus you control chemicals used.
95	56	Buy disease resistant plants. Example VF, VFN, VFNT tomatoes. However, these are hybrids and not heirlooms.
96		Scab resistant apples: http://blog-yard-garden-news.extension.umn.edu/2014/11/the-best-crabapples-for-minnesota_3 .

97	57	Several tips from the Audubon Society: Plant shrubs with berries (or crab apples) for the birds.
98	58	Leave perennial seed heads on plants overwinter for birds.
99	59	Plant evergreens or dense hedges for bird shelters.
100	60	Plant spiky shrubs for bird protection and defense.
101	61	Plant, or leave, milkweed for monarch butterflies.
102	62	Reduce use of gas mowers. 17 million gallons are spilled each year refueling lawn equipment. Gas mowers contribute nearly 5% of the national air pollution. One hour of mowing equal one hour of running 11 newer cars.
103	63	Don't spill fuel. 17 million gallons spilled each year according to EPA.
104	64	Use a reel lawnmower.
105	65	Use a cordless electric. New ones are going to be solar powered.
106	66	Plant a no mow lawn. http://www.extension.umn.edu/garden/landscaping/maint/ts-selecting-cool-season.htm , http://www.extension.umn.edu/garden/yard-garden/landscaping/ground-covers-for-rough-sites
107		Any ground cover could be used for "lawn" but walkability is an issue
108		Sedum as no mow lawn
109		Sedge as no mow lawn
110	67	Add fescue to your lawn. Drought tolerant deeply rooted grass. http://www.extension.umn.edu/garden/landscaping/maint/ts-selecting-cool-season.htm
111	68	Use a broom instead of a leaf blower.
112	69	Properly dispose of left over garden chemicals. County Hazardous waste centers. Usually worthless after one year.
113	70	Stabilize your shoreline. Do not mow, do not fertilize, plant native long rooted plants for a 15-25 foot buffer. www.dnr.state.mn.us/rys/index.html
114	71	Get a soil test for \$17.00 per sample. http://soiltest.cfans.umn.edu/
115	72	Use only appropriate amounts of fertilizer. Use less if you leave grass clippings on lawn. Soil test will tell you what you need.
116	73	Sweep up spilled fertilizer so that it doesn't wash away into stormwater and lakes. Never fertilize on frozen ground as it will wash off.
117	74	Do not automatically use Weed and Feed products. Do you really need the herbicide? Is it the proper time to apply? For broad leaf weeds like dandelions applications need to be when actively growing.
118	75	Pre-emergent crabgrass killers kill seedlings only as they start growing. Timing is critical and depends more on the weather than the calendar. Any other time is a waste of toxic chemicals. Remember, you can't seed your lawn or bare spots after application of a pre-emergent herbicide.
119	76	Seriously, lower your lawn standards! A couple dandelions and a little creeping charlie won't kill you.
120	77	Phosphorous not allowed on lawns in Minnesota. It is rarely necessary and it destroys lakes and rivers. If a soil test says it is needed, it can be used
121	78	On the other hand, thick healthy lawns prevent weeds from developing and help with run off issues.
122	79	Use permeable hardscape surfaces with spaces for water to enter soil. Good examples at the Savage Environmental Learning Center and the Scott County Fairground teaching gardens.
123		Underlayment is important.
124	80	Reduce compacted soil. Water runs off, roots can't penetrate and plants can't grow.

125		Add organic matter to compacted soil and don't drive on it, don't walk on it, and don't work it when wet.
126	81	Evergreens for winter windbreak
127	82	Shade the house. Deciduous trees shade in the summer (can save 50% of airconditioning) and let sun heat in winter.
128	83	Shade the airconditioner in the summer.
129	84	Plant trees! Absorb CO2 and air pollutants, give off oxygen, cool streets and cities, saves water, prevents soil erosion, and can provide food. Adds psychological benefits too.
130	85	Plant a Bur Oak, <i>Quercus macrocarpa</i> . Supports 518 insects for bird food. Native trees have the larva that birds need to feed their young. www.saintpaulaudubon.org/sites/default/files/GoNativeBooklet.pdf
131	86	Here are other trees good for the birds: More trees good for birds: White Oak 518, Chokecherry 429, Red Maple 287, Sugar Maple 287, White Pine 191, Hawthorn 150, Hazelnut 124, and Serviceberry 119.
132	87	Protect pollinators. There are more than just honeybees.
133	88	Have something blooming all season for the bees.
134		Suggestions for pollinators: March-May, Large beardtongue, Pussy willow, Wild geranium, Hawthorn tree. March - July, Lanceleaf coreopsis, Virginia waterleaf, Wild lupin. July - July, Goatsbeard, Blue lobelia, Purple coneflower, Slender mountain mint. June-September, Alsike cover, Anise hyssop, Autumn joy sedum, Beebalm, Bicolor thistle, Borage, Carmint, Comon boneset, Culvers root, Cup plant, Ironweed, Jewelweed, Joepye weed, Oregano, Partridge pea, Purple prairie clover, Tough blazing star, Sunflowers, Swamp milkweed, Yellow coneflower. More at: https://www.beelab.umn.edu/sites/beelab.umn.edu/files/plants_mn_bees.pdf
135	89	Visit the Arboretum's new bee lab. http://www.beelab.umn.edu/
136	90	Avoid the systemic insecticide neonicotinoid in products with these names: Actamiprid, Clothianidin, Dinotefuran, Imidacloprid, Nitenpyram, Thiocloprid, and Thiamethoxam. Many store-bought plants have been dosed with these insecticides.
137	91	Even "organic" insecticides can harm bees. Apply late in the evening or at night and follow the instructions.
138	92	Provide habitat for bees to overwinter. Native bees use ground litter.
139	93	Leave some bare patches of soil, without mulch, for groundnesting bees.
140	94	Protect bumble bee nests.
141	95	Provide bee nests. Mason bees like these kind of boxes.
142	96	Protect swarming bees. First, stay away and leave it alone. Then call 651-436-7915 for advise and possible collection. https://www.mnbeekeepers.com/help/honey-bee-swarms
143	97	Grow your own food
144		Buy local
145	98	Learn to preserve food by canning, drying, freezing, etc. Do it safely. Improper canning can kill you! Botulism. http://www.extension.umn.edu/food/food-safety/preserving/canning/canning-basics
146	99	Use a portable fan to keep mosquitos away. Move it around the garden with you.
147	100	Use lake water to water your lawn? Check your local municipality. Encouraged in the City of Prior Lake.
148	101	Check with your city, county, or watershed district for local initiatives. Some even have grant money for rain gardens, permeable paver projects, shoreline restortion etc. Many areas have tree sales with great prices.
149		Common Themes

		Use native plants
		Conserve use of water and energy
		Minimize use of chemicals
		Recycle garden waste
		Provide habitat for birds, bees, butterflies, etc.
150		Lots of resources listed in the handout, generic U of m extension website
151		Closing slide