

All the Best Sense in a Garden - Extras!

You came to our presentation, closed your eyes and enjoyed a garden for what you hear, feel, smell and taste.
Here are more articles, charts and lists to help you make more of those other dimensions in your garden.

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B1. Increasing the feel in a garden:

Use a distinctive surface for the walkway that leads from door to garden.

Consider changes in paving underfoot at significant places such as intersections.

Place rails at steps.

Use hip-high (hanging-hand high) sculpture or posts at intervals, or guide rope/chain strung between posts long one side of the path.

Put a low-rise curb along the path edge, so a toe touch tells you the way.

Plant wiry sub-shrubs along the path edge (like a low curb to guide the questing foot)

Hang mobiles along paths, just overhead -- reachable telltales, not head bangers.

Plant soft plants at intersections and corners, and near seating areas. huggable plants.

Eliminate plants that have a feel you don't like, and those like them.

Seek and plant more plants and non-plant features with attractive feel. Your preference between smooth twigs and corky twigs, open branching and dense twigginess, pliable tips and stiffer even claw-like branch ends, fuzzy surfaces and thorny, etc.

Prune to elevate trees and shrubs, keeping paths clear so no one might be poked and there's less chance of spider webs grazing a face.

Don't use bamboo stakes and other sharp rods in a garden where people will be bending down to touch plants.

Plant a groundcover that has a contrasting feel beneath a shrub or taller perennial -- felty lambsear under the stiff, smooth leaves of boxwood, for instance.

B2. Upping the sound factor in a garden:

Block undesirable sound with dense twiggy barriers or berms.

Mask unwanted sound with more pleasant "white noise" such as ornamental grasses' rustling or a water feature with a spray or fall. (Remember that any water sounds are very noticeable, even the drip of a leaky bucket can be rigged as a soothing feature.)

Create an easy listening space -- place a chair where your ear tells you a person can most readily enjoy the sound of swishing stems, fluttering leaves, crickets, etc. are most easily heard.

Tune your wind chimes by moving the clapper higher or lower.

Create reasons to be out in a garden early in the morning before neighborhood sounds increase.

When you shop for power tools, make increased muffling a criteria. Electric is quieter than gas, and decibel levels are specified on packaging of noise-reduced equipment.

Keep oil handy for squeaky wheels, chair rockers, etc.

B3. Doing more with garden fragrance:

Line paths with aromatic foliages that will release fragrances when touched by toe, hand or hip.

Place scented plants upwind, so breezes will be carried downwind to primary viewers.

Create morning sitting areas, to be near plants when still air allows fragrance to linger.

Make a centerpiece for your patio table where you can put fragrant twigs, foliage or flowers near a burning candle, allowing the warmth to release their scent.

Eliminate plants that do not please your nose! Look for more like the ones you enjoy.

Cut flowers in bud to enjoy in the house, if you have noticed that what smells good outdoors becomes overpowering indoors -- fragrance ages and it is often the case that we like the scent of a young flower but not that of the aging bloom.

Consider the time of day a plant releases its scent. Some are pollinated by night flyers such as moths and so are best enjoyed in the late afternoon and evening.

Water the garden the *day* before a party, not immediately before, as dry, warm foliage and flowers are often more pungent.

B4. Taste-enhancers:

Acquaint your family and friends with unusual edibles in your yard, such as pansy flowers, lemon balm leaves, fennels stems and serviceberry fruit.

Conduct taste tests with what you learn is edible. Put calendula flowers and dandelion leaves into your salad, taste the apples from your tree, etc.

Cut stems from herb plants and hang them to dry in your home.

Ear to the Ground: Sound in the garden

"I don't know what made me do it but I told him, 'come on we have to leave *right now*.' He looked at me like I was crazy but he came with me to the front yard. Then we heard a noise, turned around, and that tree fell, just tipped over, right across the whole back yard."

Did a stately old beech warn Connie to move? Given all the years she'd spent talking to it while out in her yard, she believes it did. Or maybe she was just in tune with the usual sounds in her yard. Her subconscious may have told her something was very wrong when her ears caught the quiet groans coming from wood compressing under a load finally too great to support.

I haven't communed with a tree in that way but have heard trees fall, tracked a sharp scrape-crunch to a snail-eating chipmunk and been astounded to recognize a pervasive, nearly tactile "shush" as the sound of thousands of elm beetles chewing overhead. I've also gauged temperature using cricket song and been disoriented by movie scenes where the background garden sounds did not match the portrayed season. I love to be quiet in a garden but the garden itself never is. Its sounds intrigue, entertain, soothe and also inform me. Come explore them with me.

Half past the dove call, early in cricket season

It's possible to tell time and date by a garden's sound. Everyone who can hear is paying attention on some level.

A metallic "Chip!", repeated but unhurried, breaks the stillness. It comes at dawn and again as the light fails in the evening, heralding the local cardinal's approach to the feeder. Perhaps the bird makes a quick round of all the bird seed stations in its territory. However, we like to think it's "our" cardinal, visiting us before all others and then honoring us again as the day's final, sure bet. So if the first call brings also the realization that, "The feeder's empty!" we scramble from bed and run for the back door, not even embarrassed to be calling aloud, "I'm coming, don't leave!"

The deez-deez-deez of chickadees congregating in the evergreens on the sunny side of the house is so warm and friendly we sometimes wish that every day was a winter day. By spring this friendly gang will disband, becoming couples, each defending a small part of what was previously common ground.

When we hear male birds begin to declare their territory, we know we've turned the corner out of winter. Yet sometimes those feather-brains jump the gun and we stop, look at the calendar and say "It's not even February and the robin's gearing up?"

Toads calling for mates are fool-proof. The evening that the trilling begins, there is no doubt it's spring.

The distant rumble of thunder, which is fine and proper at toad-trill time, can puzzle and disturb us if it comes in winter. "Was that thunder? Now?!"

Spring then turns to summer with the first annoying whine of a mosquito or angry bizz of a hunting yellow jacket. Both set off sympathetic vibrations in our primal fear centers.

That's one reason it's so amazing that a very similar sound of summer only makes me smile. It's the high whine of a honeybee, abruptly muffled every second or two as the insect flower hops just inches from my head as I work among the flowers. It's such a business-like sound, from creatures so obviously focused on the flowers that my nerves know they have no plan to bother me.

Then there are the hums that rumble so you can feel them, like the water-muted thrum of a big boat passing slowly. They come from a bumblebee, dragonfly or hummingbird. These arrest me, and make me feel like a kid every time to realize that things so fantastic can exist in my garden.

Summer's here if we hear the tattoo of wings or a persistent thunk-thunk on the window screen. It's another moth or May beetle falling under the spell of our interior lights. What a thrill to also hear the trill of a gray tree frog, and know it may be clinging to the wall near the porch light, anticipating just such a bug-brained mistake.

Then comes "August," when whole trees kirr-whirr loudly, one canopy seemingly answering another. Afternoons are full of grating from various cicadas, beginning abruptly and building to astonishing volume. At night, those cicadas yield to chirping tree crickets and rasping katydids.

When a mourning dove flutters onto a prominent perch and begins its plaintive, two-note call, I put a little rush on whatever project I'm trying to accomplish in the garden. I know that on my garden clock that dove appears only after 4 p.m.

It's only in late summer that we hear the questioning, minor key, "foo-wee" that means young goldfinches have fledged. They still beg to be fed even as they learn to feed themselves, tagging along after their parents. We wonder that we never hear a "Pipe down already!" from the adult birds as the troupe forages in seedy prairie dock, purple coneflower, or globe thistle.

There's the call of migrating geese and the distinctive rustle of tall grass seed heads to tell us fall's arrived. Listen closely and you can separate the "hink" from the first of the mated pair from the answering "honk" of its mate, and distinguish the clatter of northern sea oats from the silken swish of maiden grass. If these cues slip by, however, you're not likely to miss others, such as the roar of distant roads and machinery that increases as the buffer of leaves drops away.

Results of a garden hearing

Even blindfolded, you can assess the growth stage and condition of some plants and gardens. No sound is like that of drought dry grass underfoot, and once you've heard the pop of peashrub seedpods bursting in the July sun, you will always recognize it. Tree limbs and even whole trunks creak as they move in a wind so that we may shift around to listen and home in on the weak one. By the same token, if you rustle a bush

or a hedge you can hear whether the stems are live and limber, or dead and brittle. As you shake hands your evergreens your auditory memory may alert you to trouble if there is an unusually heavy patter of falling needles. Hickory nuts, acorns, black walnuts, apples and mulberries, green or ripe, each fall with distinctive pings, clacks, thuds and splats.

Usually, we use what we see or feel to make decisions about garden care. Yet what you have heard, even or especially at a subconscious level, plays a part in those hunches that contribute to a green thumb. So why not see what you can do by focusing deliberately on this input? The steady drip from leaf tips after a downpour is quite different from the shimmery patter as a breeze strips a light shower from leaves. There are also differences in the sound of drops rebounding from dusty ground, plunking onto moist earth or being pillowed by cushy mulch. Close your eyes one day, move away from the loud rattle and ping of raindrops striking roof or patio, and enjoy the subtler variations of water on soil and leaf.

Thus attuned to water's sound, set your oscillating sprinkler by ear, reckoning how much of each sweep is falling wastefully on pavement, running off hard packed soil rather than soaking in, or being blocked by foliage. When you hear it crackling against bark, you may understand that's as damaging as if a water gun struck your leg every 6 seconds for an hour and a half. Rather than set a sprinkler for full arc and top pressure you might hear the reasons for reduced pressure or narrower coverage.

If you have an in-ground irrigation system, you probably test your reflexes regularly. You know whether you're still able to grab your tools and get out of range of the sprinklers after hearing that fizz which precedes the spray. Why not test your perception of the system in other ways? Stand with your eyes closed and listen to each zone as it runs. Concentrate, and you'll realize your ears can take you to heads that are clogged or broken, barely whispering or burbling incoherently among the general righteous spritzing.

It's interesting to try these things, even if some sounds elude you. It's fact that most people over 30 lose the ability to hear higher frequencies, and once over 50 we generally find lower ranges slipping away, as well. Yet the exploration of a garden's alternate dimensions is great exercise for mind and heart, even if the effort takes place more in the brain than the ear. For instance, compare notes with others about what you each hear. Don't consider it a contest but a chance to broaden your perspective.

With my teenage niece and my sister, I once listened to a recording of insect sounds (on the CD accompanying the book *Songs of Insects* by Wil Hersberger). Some of the recordings, the book advised us, were of insect sounds so high in frequency that only youngsters might hear. So my sister and I were pleasantly surprised at how many of those sounds we could hear. More importantly, it was an exercise that opened discussion along unexpected paths, such as what that hum is coming from the shed ("Hum, what hum?"). Another meandering took us to certain shop owners and club managers, prohibited from overt age discrimination, who seek to repel teenagers by broadcasting high frequency noise inaudible to adults. Certainly I never imagined the existence of, or thought I'd ever debate with a teenager about, high frequency ring tones marketed to kids as a way to get around classroom bans on cell phones!

Considering creatures more commonly rated as varmints, sound might offer even greater possibilities. The best young human ear can only hear tones with frequencies below 20,000 Hertz (Hz). Yet a rat's ear registers sounds up to 50,000 Hz, a mouse to 100,000 Hz and moths to 240,000 Hz. Perhaps my young friend Dominic, who's been working on sound's fringes for a decade as he deliberately composes music so that it will disturb a human audience, will find his niche in creating tunes to send specific pests running. Then he can translate them into ultra-high frequencies and make his fortune selling garden-protective sound kits to my grandkids.

Listen to who's sharing your garden

For now, varmints make their way undisturbed in my garden on most days. But when it's very quiet I have heard rabbits busily chewing, groundhogs snapping stems, squirrels gnawing bark, even voles scuttling. Then, I have delighted in sending my dogs after them. Doubtless, with their 60,000 Hz ears they have not needed my direction. Yet they learned long ago that alerts *they* gave to *me* would fall on deaf ears, netting only responses such as, "There's nothing out there! You have another think coming if you think I'm going to let you out and in all day 'just because!'"

Wouldn't it be something to have ears so sensitive as a dog? (Right -- we'd never get anything done amid all that distraction. Nevertheless...) Just once it would be nifty to hear what my dog, or equally gifted cat, is hearing. What accompaniment is there to that tiny rustle as a robin lifts a beakful of mulch, scatters it and then pounces on the insects and worms it's uncovered or startled? Would I hear the slither of the worm that drew the bird's attention in the first place, or the squeaking of the captured insect? When I hear the faint skree of the hawk high above me, could I also catch the frantic rustle of fur as every rodent in sight dives for cover? Would I be less startled by the sight of a toad or garter snake, because I heard them before uncovering them? When that shrew, an amazingly brave and perpetually famished hunter, targeted my hand as it probed under a catmint, would I have heard it growling as it doggedly clung to my gloved finger?

No, all the extra input would not be good in the long run. It would probably drive me crazy, like the character from an Alfred Hitchcock collection of short stories. That man found he could hear plants' voices as they were plucked, shorn and otherwise mistreated by people. I'll settle for simply knowing all these other layers of sound exist.

About ten years ago I heard an interview with a man who found a way to record the sounds some insects such as treehoppers make by drumming on plants. He translated those recordings to human-audible frequencies. It was fascinating, and came back to me recently while I was snapping garden debris to fit into a yard waste bag. Such different sounds the various stalks and twigs made, especially dry stems compared to those that were moist. Would dry plants -- stressed plants -- serve as better drums for insects, sending these signals to potential mates even farther afield? Could that be one reason that plants already in trouble for other reasons net more than their share of pests? No wonder we're told, "Keep the plant healthy and it will be resistant to trouble."

Plea for quiet

Appreciating sound requires quiet, and that's sadly hard to come by. Very early in the morning, a time I used to love for the lack of human sound, is now the time when high-whining parking lot sweepers work. Truckers, adjusting as they must to increasingly congested roads, make deliveries earlier and earlier. As they maneuver to a loading dock their vehicles' back-up alarms cut the pre-dawn darkness like strobe lights. Such things come between me and my garden even a quarter- to a half-mile away. During the day, I joke -- because ranting is fruitless -- about omnipresent mowers and blowers, power trimmers and chain saws. These ubiquitous noises, roaring close by or humming at a distance, have almost certainly done more than my age and reduced hearing to ruin my audio pleasures. It's a rare day now when I can hear the first ruffle of a breeze to come, playing across the top of the tall cottonwood a block away. Fat chance now to be able to tell if its leaves are dry or moist, as once I could discern.

It's been well over a decade since others who love quiet first organized to protest and restrict the use of gas-powered blowers and excess mowers in some communities. I can understand the green industry's objections -- why regulate us while overlooking home gardeners' noise? I can, however, question the defense it takes -- that businesses cannot operate effectively without the offending machinery, schedule or tactic.

In arguing against change, green industry statements include estimates from this expert or that operator to the effect that outmoded, manual, quieter ways would require half again to ten times the labor. I've looked but have yet to find objective studies to support those estimates. Meanwhile, in trials of my own such as timing one gardener with hand shears and another with power trimmer, one with rake and another with a blower doing the same work, I've most often found the methods equal. When I've broadened the scope to cover a complete operation, from set-up to clean-up, it's even happened that the manual mode is quicker.

Yet I know that the sound situation is unlikely to change dramatically in my lifetime. Too much money has been invested in equipment, too many people believe that carrying a power tool is inherently better than wielding a hand tool, and too many people who are not able to exert themselves with rake or broom are enabled by power assist. What I can hope is that everyone will at some time enjoy some quiet sound enough to want to hear it again, and will now and then throttle down or otherwise minimize their noise. Into that occasional quiet I'll throw outmoded sounds, so perhaps mine will not be the last generation of Americans to recognize the whirr of a reel mower, the singing of shears, the strumming of a rake or the chuff of a spade biting soil.

Echoes of the fun stuff:

The beech speaks

A big tree like this beech is always making noise, and we're always registering its voice at some level. Of course its sounds change as the tree begins some final twist, perhaps after a critical seam succumbs to that ancient, invisible nemesis, internal decay. The trunk groans or the roots begin to snap and we feel it through our feet and as a rumble in our gut. We can say the tree sounded a warning that it was about to fall.

A chuckle over chickadeez

Probably some sounds are universally rated "pleasant", such as the chick-a-deez-deez-deez call of the black-capped chickadee.

Hey buddy, wouldja tune those chimes!

Wind chime promoters claim the best sound comes when length of tube and placement of clapper tunes them to the pentatonic scale used by most blues- and folk musicians. Many people disagree, saying that all chimes are just noise. Few garden fixtures create such controversy.

...but can they play "Wipe Out"?

An eastern tent caterpillar rears when disturbed. Some caterpillars go a step further, drumming on the leaf surface with mandibles and hind end to send intruders packing. Gardeners who have been visited by gypsy moth and know the creepy hiss of a million mouths chewing will not be surprised to know we can sometimes hear a band of tiny percussionists, too.

Could we leave the water running to mask the sound?

Big caterpillars like this polyphemous moth are just funny. One we raised indoors needed a platter under its leaf-filled vase to keep its mess under control -- we could actually hear its droppings plopping!

Tiny bird with a mighty rumble

A hummingbird's wings may be beating as fast as 200 times per second even while hovering, making a low frequency sound you feel as much as hear. In comparison, the bumblebee rumbles by creating a 150Hz wake. The sound from the biggest dragonfly falls between bird and bee while the tinier species' 30Hz ripples might be audible only to very young children.

Sounds to drive you buggy: Stridulation, percussion, and tymbals.

Think of singing insects as rambunctious kids in the yard, each equipped with a stridulator, drum, tymbal or clicker and using that instrument with non-stop, fast paced gusto. Now imagine ten thousand kids out there, each with clicker in one hand and metal rod, plastic wand or wooden dowel in the other, rattling their sticks along various fencing as they ride by on bikes fitted with playing cards and balloons to thwap against the spokes. Is that music to your ears, or noise?

Stridulator: A fingernail running along a comb or a stick clacking along a picket fence. A katydid uses the rough edges of its forewings to sing a ratchety, syncopated "katy did, katy didn't." A cicada rubs ribbed wing edge across rough leg at "grate rate."

Drum: Most insects that sound off via percussion use plant stems or leaves as their resonator. Some beat on their own body, like a one-man band popping a finger against taught cheek.

Tymbal: A resonating surface. Cicadas, for one, use a tymbal to amplify their stridulation. Their system's so efficient that some species can top 100 decibels (Db), a racket nearly as loud as a power lawnmower.

Clicker: You probably played with one as a kid, a convex metal form with a straight tab spanning its open underside. Press the metal tab and it pops back out, its sound amplified by the dome above. Ironically, the dome may have been painted to resemble a beetle or other insect form.

Onomatoadtrill-a?

Few words describe a sound as well as trill fits the male toad's song.

Beg for more

Once heard, never forgotten -- the sound of nestlings begging all at once as the parent arrives with food.

Feather that reed, riffle the maiden

The person who wants the susurrus of wind across grass may be disappointed by feather reed grass (*Calamagrostis acutiflora*), a stiff and quiet species. They should cultivate the riffle of maiden grass (*Miscanthus sinensis*).

Silent as stone?

The more stones it meets and steps it tumbles over, the louder water's sound. Even a tiny brook can be a mighty presence. This sound is far more acceptable to most people than that of wind chimes.

Water torture

Even if it's a tiny trickle at a distance, the sound of water registers. Where it's a fixture, it may in time become white noise and then its cessation can prickle, calling us to come out and make things right.

Singin' in the rain

Where you may see nifty outdoor art, I see an opportunity to play a stream of water across the surfaces and hear a new song.

Plug and muffle that mower man

Some power equipment is designed to run quieter -- shop for it and support those manufacturers. Electric motors are quieter than gas engines. Equipment run at half- or quarter- speed may make less than half the noise of the full-throttle machine.

The universal sound

We have no air conditioning in our home, and never feel we might want it except on a few particularly hot, muggy days each year. That bit of discomfort is a small price to pay for the pleasure of windows always open to the garden's best sounds: Kids laughing, frogs splashing, plants rustling, and gradual awakenings as the garden's orchestra gathers and tunes up.

...whatever you like, just not late for dinner

As I work I love to know where I am in relation to the wider world. With my head down in the garden I'm oriented by sounds, such as an old lunch bell clanging on the next street, a distant whistle of a train approaching a crossing, or the carillon from a neighborhood church.

Gone with the wind

A friend once ribbed me for my preoccupation with garden sound, including my collection of audible plants such as pignut and Canterbury bells. Yet even she sighed a bit wistfully at the recollection of the melodic snick and idling whirr of the reel mowers we pushed as kids.

Yet it didn't go viral!

Crickets chirp at speeds affected by air temperature. The National Oceanic and Atmospheric Administration once had a Cricket Chirp Calculator page, where you could plug in the number of chirps you counted in a minute and see that translated to degrees Fahrenheit. That page is gone now but from sources such as Fun Science Facts from the Library of Congress you can still call up the formula: Count the number of chirps in 15 seconds and then add 37.

Want to hear various insect songs and wildlife sounds? Check out <http://www.naturesongs.com>

Elements of Scents-ible Design

We stepped out of an air conditioned car one still summer night and into a cloud of dill. The fragrance drifted across the driveway, nearly visible in its richness, and we smiled to be enjoying our garden even in complete darkness. "Everyone should have this," we said, and went inside, suddenly hungry.

Fragrance is an aspect of a garden that extends through space and time. That hint of dill came to me across 50 feet on a wandering breeze plus it planted a seed in my brain. Years later in a deli miles away, that seed sprouted and the whole garden popped into my head in complete detail in a split second, even before I registered the fact that the package I was unwrapping contained a pickle. I expect that memory may come to me again, perhaps even during my last moments in this garden; I'd be glad of that.

I hope your garden has such dimension. If you're still working on the scents-ible aspects of a planting, here are some things to consider.

Follow your nose

When you're deciding what to plant, think about smells you like and those that you don't. Also ask others in the household what fragrances they consider to be good and bad.

Non-gardening residents often say "Whatever!" to my questions about color and claim "No preference" when I poll them for plants they want included in the design. Yet they come to life with adamant, detailed descriptions if I raise the issue of fragrance by suggesting specific plants. "Lilacs? I *love* lilacs, my grandma had one outside her kitchen, with a bird house hung in it." Or "Did you say carnations, that it smells like carnations? Take that off the list, that smell makes me think of funerals."

Asked about smells in general, a person may answer with a culinary reference or a other fragrance from inside a childhood home:

"What smells do I like? Homemade bread! And cinnamon rolls."

"The smell I remember most from growing up is Vicks Vapo-Rub!"

"Mom had this perfume, she called it moo-gay de-bwah, which meant 'lilies of the woods.' It was in a square bottle with a gold stopper. I loved it!"

"Dad liked these hard candies, he carried them in a little tin in his pocket. He'd unscrew it -- I can still hear it scrape! - and I could smell the peppermint."

Our gardens can and should link us to these fragrant memories. (See the "Smells like..." lists.)

Any way the wind blows

Make it easy for a garden's users to make olfactory connections. As you design, anticipate traffic so you can juxtapose plants and people.

Position fragrant plants near windows that will be open. If a house is air conditioned and will be shut throughout the summer, concentrate scented leaves and flowers near the driveway, walkways and sitting areas.

Notice the direction wind moves across a property, so you can place plants upwind of people. The prevailing wind is important, and usually comes from the west or northwest. Yet the zephyrs most helpful in carrying scent are light breezes -- under ten miles an hour and more variable in direction. The best way to detect them is to go out in the yard early in the morning and again at evening on sunny summer days. Light breezes often start up following the still of early morning as sun-facing slopes, open areas and lakeshores heat up more quickly than nearby shaded spots and water. Such airs often swirl to reverse themselves in the evening.

Since scented air is full of oil and heavier than fresh air, you can trap it for your enjoyment with low windbreaks. Pools of fragrant air may accumulate on the windward side of a hedge or fence, so consider enclosing an herb garden, fencing the side of the yard downwind of a flower bed, or adding a strategically placed wicker panel just downwind of a patio.

Plant herbs where their leaves will overlap or fill along a path to be crushed or brushed by passersby. An amble past lavender, thyme, sage, mint, fennel and burnet can stir a potpourri of aroma as oils escape from bruised foliage. That particular grouping may turn a stroll into a dash for the kitchen, however, beginning as it does with lavender oil that relieves agitation but ending with appealing smells strongly associated with roasting, mints, licorice and cucumber -- a subconscious appetizer.

Time honored, time filled

It's appropriate to use plant aroma in these subliminal ways, since our scent center is in the oldest, "reptilian" section of our brain. When we strew herbs to scent our passage, we follow in the steps of Dark Ages housekeepers. Rub a roast with sage and rosemary or flavor apples with cinnamon and we appease tastes acquired when food often had to be used even after spoilage began -- the fragrant oils in those three plants and many others are very effective antiseptics.

Another time honored and practical use of aromatic plant foliage is as a coolant. Slip lavender and other fragrant leaves between linens and they not only smell good but feel cooler on a warm night as the cloth releases oils it absorbed.

To understand how this can be, focus on the fact that scent is oil that has volatilized -- made the transition from liquid to gas. Its transformation required energy, in the same way that energy is consumed as water changes from solid ice to a liquid, or H₂O in plant leaves separates into hydrogen and gaseous oxygen. That transforming energy comes from surrounding air molecules, which cool off in the process. So if you can design a garden to surround people or shade them with scented foliage on a summer afternoon, they'll be extra cool.

As you pay homage to past uses of fragrant plants, look forward to be sure you fill the future with them. Employ them at every hour, and in every day and season you can.

Doing this can engage a designer for years or a lifetime because it involves learning which plants develop their best fragrances early in the day, which shine by night, and also selecting for a sequence of bloom and leaf development. It pulls us out into the garden well into the off-season to discover oils in evergreen foliage, wood and root that can drift even in frigid air.

When we select a plant for its fragrant flower, we place it so it will be in bloom when we need it. However, when we use them this way, each plant may "work" for us for just a few weeks of each growing season. Fortunately, fragrant oils occur not only in flowers but in leaves, twigs, fruit, seeds, wood and roots. Thus the lists here include, and great designers the world over use, all of these plant parts to scent a garden.

Extra-dimensional enjoyment

When we make deliberate use of scented leaves and twigs, add fruits and seeds that please the nose as well as the taste buds, and mix in some aromatic wood and roots, we give a garden's users continual discovery and reward. That yard will engage the curious child, increase enjoyment for anyone inclined to touch, appeal to noses both high and low, and call people out into the fresh air at all seasons. It will offer a lifetime's worth of diversion for innovative souls who stop to sniff while pruning, investigate a spade-released whiff of camphor, think to throw unusual kindling on a fire, or try their hand at homemade wattle or wicker.

Attending our noses leads designers further down the fragrant path, too. Don't be surprised if a single foray into fragrant design makes you more cautious in both plant and inorganic material choices, so that you begin sampling new plants' aromas before you buy, avoiding strongly scented mulch and recognizing unfinished compost on the basis of sour smell alone. You may find yourself thinking twice about a pesticide simply on the basis of its pungency, and using ammoniacal or fishy fertilizers only in cool weather. If we should then meet, sniffing our way along the aisles in a garden center, be assured that the smile I'll give you has nothing to do with condescension -- it's unadulterated camaraderie!

Additional Scents-ability: A whiff of things to come

Aw shucks, it's not for us?!

Plants don't create fragrance for our benefit but to attract pollinators like these bees and also protect themselves. So as you select plants for your olfactory pleasure, keep in mind that the word "fragrance" can include disagreeable odors as well as fruity sweet aromas.

Who let that wet dog in here?

Foxglove beardtongue (*Penstemon digitalis*) is also called "wet dog," a reference that may puzzle you in seeing and sniffing the flowers but become clear once you sample the distinctive odor of its seed pods.

But I asked for the *fragrant* viburnum!

Not all members in a plant group have the same scent. Those who have come to know a clove-scented *Viburnum* (such as *V. carlesii*) may be shocked at the penetrating whiff of ammonia that comes from admiring the likes of an arrowwood (*V. dentatum*) or leatherleaf (*V. rhytidophylloides*) at close quarters.

Blondes have more fun, brunettes more scents?

It's said that dark haired people have a better sense of smell than those with light hair. One proof of that may be in what a raven haired friend said on seeing this photo of my tow-headed daughter with her nose just inches from a lily relative, *Cardiocrinum*, that's known for its heavy, even sickly sweet perfume. Said my friend, "If I put *my* face into a lily like that, I'd pass out! "

To call someone "sweet pea" can be quite the compliment:

Many members of the pea family, such as black locust (*Robinia* spp.) and yellowwood (*Cladrastis lutea*) have an intoxicating, universally loved, sweet scent.

One man's sweet, another man's camphor:

Spicy-sweet *Calycanthus floridus* has fragrant flowers and its twigs offer pungent fruitiness, too. Some liken its scent to strawberry, others detect apple.

Waves of scent repel insects

Both fragrant sumac and thyme have few pest problems. That's by design -- their wood, leaves and flowers are all loaded with antiseptic and insect deterring oils we detect as nose-clearing fragrance.

Only skunky when disturbed!

Keep your nose out of the meat-colored flowering structure of skunk cabbage (*Symplocarpus foetidus*), groundcover Dutchman's pipe (*Aristolochia clematitis*), red trillium (*T. erectum*) and wild ginger (*Asarum canadense*) unless you like the same smells that attract carrion flies.

Perhaps you *can* draw flies with honey:

Flies are important pollinators of many plants, including some that smell sweet. When you see they are the only insects to visit a flower, approach that scent cautiously. Garlic chives (*Allium sativum*) entertains bees as well as flies. Some people might object to its sulfurous odor, while others pluck the flowers and add them to a salad.

Designing for the smell of a gym bag?

Do you think of gymnasiums when you catch a whiff of barberry, daisy (*Leucanthemum*), fairy candle (*Cimicifuga*), *Cleome*, or meadowsweet? No wonder, since their essential oils contain compounds also present in human sweat and urine. Another, trimethylamine, creates an odor of ammonia in some species of hawthorn (above), *Cotoneaster*, firethorn (*Pyracantha*), privet and mountain ash.

Lilac plays the old switcheroo

One group of scents frequently plays tricks on us. Lily, hyacinth, paperwhite narcissus, lilac, privet and others have a heady, sweet smell that may be delightful outdoors but can become so oppressive when we bring the blooms indoors that our scent center blocks it. When that happens, previously masked compounds such as indole -- also found in decaying flesh -- come to the fore.

Shrivel me timbers, that smells good!

Sweet Joe pye (*Eupatorium purpureum*, above), sweet woodruff (*Galium odoratum*), and sweet grass reveal themselves as akin to vanilla or new-mown hay when their seed pods ripen and dry or the foliage dries at year end or on an herbal drying rack. Then their coumarin content reaches a level we can detect.

Smells like...

An exhaustive list of plants with fragrant parts would fill many volumes. This line-up of fragrance groups is based on one put forth in the late 1800's. It's organized by species' primary scent compounds. You may feel that some scents are missing and some plants are mis-appointed here. That's understandable -- each person's nose may home in on a different component in a given plant's fragrance, perhaps because each person first assessed the plant in different environments or stages of development. Those undeniable, debatable variables of smell and individual appreciation are the reason no other system has evolved since this classification developed a century ago.

Yet organization of odor is helpful. You can use the following lists to:

- Describe scents by comparison,
- Propose scents by groups to those who have share an interest in gardens you're designing, and
- Write in additional species as you meet them, placing them in the group your nose says contains their closest kin.

1 - Animal/musk scent in flowers and plant parts

A chief component in these plants is trimethylamine, a compound as odiferous as its name appears. It gives flowers (and other parts as noted) over- or undertones of ammonia, perspiration and musk. Some are called skunky, others foxy, fishy, or like wet fur but many can be passable or even pleasant if inhaled from a distance. A few are lemony when the flowers are fresh, with more and more ammonia apparent as the blossoms age.

Arrowwood *Viburnum*

Boxwood (all parts, pronounced in flower)

Cockspur- and Washington hawthorn (*Crataegus*)

Cotoneaster

Crown imperial (*Fritillaria imperialis*) (all parts)

Elderberry (*Sambucus*)

Fairy candle, snakeroot (*Cimicifuga*)

Foxglove beardtongue (*Penstemon digitalis*) (seed pods)

Gas plant (*Dictamnus alba*) (all parts)

Hemlock (*Tsuga*) (all parts)

Hyssop (all parts)

Leatherleaf *Viburnum*

Mountain ash (*Sorbus*)

Ornamental salvias (leaf)

Privet (esp. *Ligustrum ovalifolium* and *L. vulgare*)

Pyracantha

Serviceberry (*Amelanchier*)

St. John's wort (*Hypericum perforatum*) (all parts)

Tree of heaven (*Ailanthus altissima*) (all parts)

2 - Heavy lily scented flowers

Similar to animal/ musk scented flowers but sweeter. In the presence of many of these flowers, indole in the nectar begins to surface, with its smell of putrefaction.

Datura
Gardenia
Hyacinthus
Lilac (esp. *Syringa vulgare*)
Lilium species, such as the Madonna lily (*L. candidum*)
Old August lily (*Hosta plantaginea*)
Paperwhite and fragrant jonquils (*Narcissus*)
Stephanotis
Summersweet (*Clethra alnifolia*)
Tuberose (*Polianthes tuberosa*)

3 - Rose sweet flowers and plants

These are the most-sought plants. Most noses detect only steady-eddy sweetness from these flowers (and other noted plants parts), with overtones of rose (R), cinnamon and clove (C) and vanilla (V)

Anthurium (R)
Azalea (R)
Beans (A)
Bigroot geranium (*Geranium macrorrhizum*) (all parts) (R)
Black- and honey locust (*Robinia* and *Gleditsia*) (R, V)
Blue mist spirea (*Caryopteris*) (leaf) (R)
Bush clematis (V)
Candytuft (*Iberis*) (R)
Catalpa (R)
Flowering tobacco (*Nicotiana*) (R)
Fothergilla (R)
Four o'clock (*Mirabilis*) (R)
Franklinia (R)
Gaillardia (seed) (C)
Garden heliotrope (A)
Jasmine (R)
Koreanspice *Viburnum* (C)
Lavender (V)
Lilac hybrids (R)
Nodding trillium (*T. cernuum*) (R)
Oregano (all parts) (R)
Peony (R)
Petunia (R, V)
Pinks, carnations (*Dianthus*) (C)
Rose (many varieties, many scents)

Rose-scented geranium (leaf) (R)
Sargent- & Japanese crabapples
(*Malus sargentii*, *M. floribunda*) (R)
Snapdragon (R)
Sourwood (*Oxydendrum arboreum*) (R)
Stock (*Matthiola*) (C)
Strawberry (flower, fruit) (R)
Sweet alyssum (R)
Sweet- and Kwanzan cherry (*Prunus*) (R, A)
Sweet Joe Pye (*Eupatorium purpureum*) (V)
Sweet pea (*Lathyrus*) (V)
Yellowwood (*Cladrastis*) (V)

4 - Spicy sweet and fruity plants

Citrus, balsam, grape and apple notes mix it up in many of these flowers and fragrant plant parts.

Flossflower (*Ageratum*) (flowers reminiscent of grape)
Basil (all parts)
Bayberry (*Myrica*) (all parts)
Bearded iris (flowers reminiscent of grape)
Bee balm (*Monarda*) (all parts)
Feverfew (*Matricaria*) (all parts)
Grape hyacinth (*Muscari*) (flowers reminiscent of grape)
Lemon verbena (*Aloysia triphylla*) (all parts)
Mock orange (*Philadelphus*)
Sassafras (all parts)
Saucer magnolia
Spicebush (*Lindera*) (all parts)
Sweetshrub (*Calycanthus floridus*) (all parts)
Thyme (*Thymus*) (all parts)
Water lily (*Nymphaea*)
Wild ginger (*Asarum*) (root)
Witchhazel (*Hamamelis*)
Yellow trillium (*T. luteum*)

5 - Mints

Midway in composition and impact between fruits and turpentine, mints are masters of the mix. They come across as sweet in peppermint, but other species and varieties are laced with camphor, citrus (orange mint, lemon balm), apple and even cocoa (chocolate mint).

6 - Honey-smooth scents

'Nuff said:

- Butterfly bush (*Buddleia*)
- Clover
- Daylily, fragrant species (*Hemerocallis fulva*, *H. flava*, etc.) (R)
- Honeysuckle (*Lonicera*)
- Hops (*Humulus*)
- Horsechestnut and bottlebrush buckeye (*Aesculus*)
- Linden/Bee tree (*Tilia*)
- Milkweed and dogbane (*Asclepias* and *Apocynum*)
- Stonecrop (*Sedum spectabile*)
- Kiwi (*Actinidia*)
- Weigela*

7 - Plants and flowers with aromas like turpentine & resin

Conifer resins are great for repelling and even killing insects and disease organisms. Some plants that don't even have resin have adopted these pungent chemicals and, like the evergreens, exude them from all their parts.

- Artemisia*
- Cooking sage (*Salvia officinalis*)
- Dill (*Anethum*)
- Fir (*Abies*)
- Germander (*Teucrium*)
- Hickory (resin)
- Juniper
- Pine (*Pinus*)
- Poplar (resin)
- Rosemary
- Rue (*Ruta*) (citrus overtones)
- Santolina*
- Spruce (*Picea*)
- Sweet birch (*Betula lenta*)
- Sweetgum (*Liquidambar*) (resin)
- Walnut (resin)

8 -Sharp scents: Camphor and eucalypts

These manage to be pleasant even as they clear your sinuses. All of these are worth using as fly whisks, so concentrated are their insect repellents.

Bells of Ireland (*Molucella*)
Fragrant sumac (*Rhus aromatica*)
Lemon geranium
Lemon thyme
Tansy
Wintergreen
Yarrow (*Achillea argentea*)

9 - Carrion flowers

The only reason to keep track of characters such as skunk cabbage and stinking Benjamin (red trillium) is to keep your sniffer clear of them.

Oddball fragrances

If an insect or animal "nose" it, a plant can make it.

Looking for a chocolate fix? Find it in the flowers of chocolate vine (*Akebia quinata*) or the chocolate daisy (*Berlandiera lyrata*).

Hooked on buttered popcorn? Grow prairie dropseed (*Sporobolus heterolepis*) for the rich scent of this native grass' late summer bloom.

Like licorice? Chew on a stem of fennel (*Foeniculum*) for a dose of anise.

Smells born sour...

Plants don't create fragrances for our benefit. Those fragrant oils are protection or promotion -- they fend off heat, fungi, bacteria, pest insects, browsing animals, even other plants, and announce a plant's readiness for pollinators. It's not surprising that we may dislike the smell of their antiseptics, sunscreens, bitter repellents, or lures meant for pollinators that favor rotting flesh and spoiled fruit.

If your sense of smell is keen it may take you just one breath to recognize tomato, potato or nightshade vine *roots*. The acetic acids they contain are akin to those in the scent glands of a snake.

...and scent that goes south

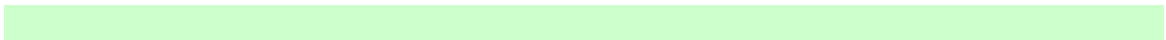
Fragrant leaves are steady as can be but flowers are more shifty. Even likable floral scents can "go bad."

Most flowers produce complex blends of dozens or even hundreds of volatile oils. Some components may carry further -- thus elderberry flowers that register sweet at a distance may impress us as rank at close quarters. Oils in the mix also break down at different rates and recombine over time -- so a newly opened rose smells sweet, while an older bloom becomes skunky. Portions of some scents are so powerful that they can overwhelm our olfactory nerve, which simply stops registering that tone. Then we sense other, lesser factions in a plant's bouquet -- our brain often ceases to process the scent of violet after a few whiffs, leaving our olfactory pathways open to the flower's secondary aromas, such as cucumber and damp moss.

There are "bad" aromas that we can learn to appreciate, just as we can acquire a taste for bitter foods. Among them are the sharp smell of marigold, pungent oiliness of *Lantana*, beery bouquet of *Geum* roots, peppery bitterness of nasturtium, yeastiness of boxwood blooms or toadflax roots (*Linaria*) and stale wooly smell of drying lambs ear leaves.

Better when dry

A recipe may call for 1T of dried oregano, or 3T of fresh. That's because drying removes water from leaves but doesn't remove most of the oils we favor for flavor. Those remain, more concentrated.



Try back later: Daily and seasonal scent

You can guess the season if you're familiar with bloom sequence.
Some plants can give you hints to time of day, too:

Flowers that are most fragrant in the morning:

Catmint (*Nepeta cataria*)
White moonflower (*Ipomoea*)
Wild roses

Evening- and night-scented ("vespertine") plants:

Anthurium
Bouncing bet (*Saponaria officinalis*)
Dame's rocket (*Hesperis matronalis*)
Datura
Evening catchfly (*Silene nutans*, *S. noctiflora*, *S. latifolia*)
Flowering tobacco (*Nicotiana*)
Four o'clock (*Mirabilis*)
Garden heliotrope
Goldflame honeysuckle (*Lonicera Heckrottii*)
Night-scented stock (*Matthiola incana*)
Tuberose
White-flowered petunias

Notable seasonal olfactory events:

In fall, you may think someone's baking sugar cookies as the leaves turn gold on katsura tree (*Cercidiphyllum*).
Tuck fruits or twigs of spicebush (*Lindera benzoin*) and bayberry (*Myrica pennsylvanica*) in your pocket for a spicy sweet pick-me-up on a winter day.
Clip sprigs of lavender, thyme and sage whenever you need a lift. Even in winter a little warmth brings out their fruity and spicy oils.
Dig a few roots of mint or bee balm before the ground freezes, rinse them and keep them in the crisper drawer of your refrigerator. Tied with ribbon in little bundles, they're as fragrant as cinnamon sticks in a potpourri bowl.

Dig in to fragrance

Many plants have fragrant roots. I've unearthed these scents:
Camphor-sweet, from sweet flag (*Acorus*)
Strawberry-eucalyptus, from tulip tree (*Liriodendron tulipifera*)
Sulfur, from *Allium*
Spice, from wild ginger (*Asarum canadense*)
Warm cinnamon and root beer, from *Sassafras*
Cool fleeting violet, from elecampane (*Inula helenium*)
Cold coffee, from dandelion
Rank potato, from tree of heaven (*Ailanthus*), nightshade vine and tomato
Skunkiness, from skunk cabbage roots (*Symplocarpus foetidus*)
Snappy turpentine, from blue spruce (*Picea pungens*)

Sense-ible Plants (in alpha order by botanical name)

Perennials and Groundcovers :

fernleaf yarrow (*Achillea filipendulina*) "Boston fern" like leaves are fragrant, grey-green; flat tight clusters of yellow flowers in June-July, up to 4'

false sweet flag, variegated false sweet flag (*Acorus Calamus*, *A. c. variegatus*) striking 3'-6' sword-like foliage, white striped in the variegated form, insignificant flower, will grow in normal garden soil but occurs naturally at waters edge

lady's mantle (*Alchemilla mollis*) mounded grey-green foliage with yellow-green foamy flowers in May-June; 12"

blue allium (*Allium caeruleum*) blue drumstick flowers in June, summer dormancy, 18"

giant flowering onion (*Allium giganteum*) a large sphere of purple flowers in June on a straight 3' stalk

sunny twinkles (*Allium moly*) yellow flowers on 6" stalks in June, dormant later in summer

rose allium, pink flowering onion (*Allium ostrowskianum*) rose colored flowers in June, dormant later in summer; 8"

white flowering onion (*Allium neopolitanum*) white flowers in June, summer dormancy; 6"

chives (*Allium schoenoprasum*) traditional cooking chives, with pink puff flowers in June on 8" grassy plants; foliage does not go dormant like other alliums, and the plant may re-bloom in August if cut back before setting seed in spring

curly allium (*Allium senescens glaucum*) attractive foliage is twisted like sausage curls, does not go dormant as many other alliums do, lilac flowers in July; 15"

purple globe allium (*Allium sphaerocephalum*) dark purple, one-inch oblong flower clusters in late June on 18" stems

garlic chives, Chinese chives (*Allium tuberosum*) garlic-scented foliage low, grassy, gives rise in August to spherical white flower clusters; 18"; spreads rapidly by seed

pearly everlasting (*Anaphalis margaritacea*) grey foliage in dense colony; white button flowers in clusters in August dry in place; 2'

pasque flower, windflower (*Anemone pulsatilla*, syn. *Pulsatilla vulgaris*) purple or white flowers in April persist long into May, delicate fluff seed pods in June, ferny mound of foliage throughout summer; 8"

pussy's toes, ladies' tobacco, everlasting (*Antennaria dioica*) creeping grey-leaf wildflower native to sunny, well-drained areas in North America; "furry" white flowers in clusters on naked 6" stems in June resemble a cat's paw with claws retracted; pink form *A. dioica rosea*

Irish moss (*Arenaria verna caespitosa*) moss-like 2-3" tall carpet plant, tiny white flowers in June, refreshing spring-green foliage is evergreen, nice for between stones

sea pinks (*Armeria maritima*) dense rounded evergreen mat 3-4" tall pink blooms in May June

silvermound (*Artemisia schmidtiana* 'Silvermound') evergreen (ever-grey) mound of aromatic foliage; flowers inconsequential; 12"

ginger (*Asarum canadense*) Heart shaped soft green leaves cover the ground; maroon urn-shaped flower in May is interesting but not visible unless leaves are moved aside; 6"

butterfly weed (*Asclepias tuberosa*) orange or red flowers in y shaped clusters in July, vase shaped, attracts butterflies 18-24".

perennial alyssum (*Aurinia saxatilis*) evergreen gray-green foliage in a 12" mat; branches sprawl along ground to 3' length; 18" flower stalks bear fragrant gold or apricot flowers in May

false indigo (*Baptisia australis*) large columnar plant, often mistaken for shrub, blue flowers along stem ends in late May-June; interesting black, persistent seed pod in fall; 4', slow to grow

bergenia (*Bergenia cordifolia*) 8" large evergreen leaf like a single thick cabbage leaf, dark glossy green during growing season, maroon in winter; rose flowers on 15" stalk in May

butterfly bush (*Buddleia davidii*) 5' woody perennial; slow to start in spring but wonderful in August with fragrant purple, white or lilac conical flower clusters attracting butterflies and hummingbirds

feather reed grass (*Calamagrostis acutiflora stricta*) 4' columnar grass, clump-forming, sharp flower stalks like flight feathers on an arrow, June, attractive through winter

calamint (*Calamintha Nepeta*) fast spreading, pink-blooming herb; 2'; July bloom, repeats sporadically thru summer

northern sea oats, wild oats (*Chasmanthium latifolium*) 36" stiffly erect, clump-forming grass (but spreads readily by seed) Dangling flower/seed heads are flattened as if pressed, become tan and noticeable from a distance in August, persist through winter

feverfew (*Chrysanthemum parthenium*) white button flowers in June-July; fragrant foliage; 15-18"

fairy candle (*Cimicifuga racemosa*) 3-6' wands of malodorous white flowers in July, ferny foliage

fall fairy candle (*Cimicifuga simplex*) 2-3' wands of white in August-September, ferny foliage may be maroon tinged

Cimicifuga ramosa, fall fairy candle - flower buds like white pearls effective in September; flowers open to white bottle brushes in late October on 3-4' flower stalks; ferny foliage

fall fairy candle (*Cimicifuga ramosa atropurpurea*, C. r. 'Brunette') 2-3' wands of white in September, ferny foliage is maroon tinged

blue bush clematis (*Clematis davidiana*) 3' columnar plant, rather floppy but a good leaner; fragrant clusters of 2" sky blue flowers in August.

sweet autumn clematis (*Clematis paniculata*, C. *maximowicziana*) thousands of tiny star shaped white flowers in September-October, fragrant; fast-growing vine up to 30', needs support

lily of the valley (*Convallaria majalis*) fragrant white bells on a wiry stalk in May; 6-8" leaves are a summer groundcover

crambe (*Crambe cordifolia*) impressive 6' flower stalks in July are leafless; white flowers in masses are sweet scented; huge, rough-surfaced basal foliage

sea crambe (*Crambe maritima*) large, wide-ruffle blue-green foliage to 12", honey-fragrant white flowers in masses on leafless 18" stalks in June

cottage pinks (*Dianthus plumarius*) blue-green evergreen grassy 12" foliage, white, pink or red fragrant flowers in June on 18" stalks

bleeding heart (*Dicentra spectabilis*) mound of divided foliage, romantic heart-shaped flowers on arching branches May-June, goes dormant late summer; 2-3' (existing)

gas plant (*Dictamnus purpureus*) rose or white starry flowers in spikes, late May or early June, sturdy columnar plant, deep green foliage, attractive seed pods in July-August, 3'

ravenna grass (*Erianthus ravennae*) clump-forming grass; leaves make a wide fountain 3-4' tall; 12' flowering stalks develop huge point-tipped plumes in late September -October

blue mist flower (*Eupatorium coelestinum*) clusters of light blue tufts flower in August, late to start growing in spring; 2'

boneset, thoroughwort, white Joe Pye (*Eupatorium perfoliatum*) grey-green foliage is distinctive in that pairs of leaves are united at bases, stem appears to pierce them; white fluff flowers in dense clusters in August; 2-3'; native to moist areas, Midwest U.S.

Joe Pye (*Eupatorium purpureum*) flat-topped clusters of light purple flowers in August, late to start growing in spring; 4' or taller; native to eastern U.S. in wet areas

purple-leaf Joe Pye (*Eupatorium rugosum* 'Chocolate') maroon foliage, sturdy 3-4' plant with large leaves and distinctly upright stems; white flowers in August; whole plant has the scent of vanilla that distinguishes the Joe Pyes. Woodland native suited to the woods edge, very tolerant of dry soils but spreads rapidly in constantly moist soil.

Eupatorium, late native spp. such as *E. rugosum* (rough Joe Pye, smokeweed) and *E. maculatum* (white snakeroot, white sanicle) - purple to white flat-topped flower clusters, 2-3' stems; woods edge

blue fescue, sheep's fescue (*Festuca ovina glauca*) 8" evergreen grass, silvery-blue, wheat-like tops to 18" in June

fennel, bronze fennel, giant fennel (*Foeniculum vulgare* varieties) airy narrowly columnar plant with lacy green or bronze foliage, yellow-green flat-topped flower clusters June - August, all parts fragrant; 4-6'

strawberry (*Fragaria virginiana* hybrid) 6" groundcover with white flowers in May, edible red fruit in June

crown imperial (*Fritillaria imperialis*) impressive orange flowers hanging like crowns from the top of lily-like stalk in May; goes dormant by midsummer; 3'

blanket flower (*Gaillardia x grandiflora*) 2' mounded plant; daisy-shaped flowers with showy, concentric bands of yellow, orange and red; blooms late June or July to August, repeats bloom into fall if kept deadheaded; dwarf and single-color varieties exist

sweet woodruff (*Galium odoratum*) spring green whorled foliage attractive all summer, scented like new-mown hay, starry white flowers in May; 8"

bigroot perennial geranium (*Geranium macrorrhizum*) pink flowers May-June, a few blooms here and there throughout summer, foliage has a nice coppery fall color and is fragrant; 12"

perennial geranium (*Geranium maculatum*) pink flowers May-June, naturalizes rapidly, foliage has a nice coppery fall color; 12"

satin grass, golden satin grass, Japanese satin grass (*Hakonechloa macra* 'Aureola') 12-18" dense mound of golden-striped arching grass

blue oat grass (*Helictotrichon sempervirens*) nearly evergreen blue-green clump grass, interesting wheaty seed heads in June; 2'

lemon lily (*Hemerocallis Lilioasphodelus*) 3' fragrant yellow daylily; trumpet flowers bloom in June ahead of most cultivated varieties

white fragrant hosta (*Hosta plantaginea*) large light green leaves, white trumpet like flowers in August very fragrant, 2'

Dutch hyacinth, garden hyacinth, common hyacinth (*Hyacinthus orientalis*) very fragrant April flowers in 8" columnar cluster, varieties available in all colors

lavender (*Lavandula angustifolia*) ever-grey subshrub, fragrant foliage and flowers, violet or white wands in June-July, 15-24"

early lily, oriental lily (*Lilium* hybrids) trumpet flowers in late June or July (varies by variety), whorled foliage on tall stems; 2-4'

late-season *Lilium*, hybrid lily (*Lilium* hybrids) erect or pendant trumpet flowers in late July or early August, whorled foliage on stems from 3-5'

mid-season *Lilium*, hybrid lily, oriental lily (*Lilium* hybrids) trumpet flowers in July, whorled foliage on stems from 2-4'

plume poppy (*Macleaya cordata*) 4-6' silvery-pink plumes in July, columnar plant with huge grey green leaves

Corsican mint (*Mentha Requienii*) Ground hugging fragrant plant, with lavender flowers in June -July

spearmint (*Mentha spicata*) aromatic foliage a giveaway on this 30" plant; flowers white, pink or pale lilac in spike clusters in August; aggressive spreader

maiden grass (*Miscanthus sinensis* varieties) graceful columnar grass, 5', silvery plumes in October, pretty tan through winter

bee balm (*Monarda didyma*) 3' erect plant, leaves and flowers fragrant, pink, red or violet flowers in July

bee balm / horsemint (*Monarda fistulosa*) 3' erect plant; leaves and flowers fragrant; lilac flowers in July; native to Michigan roadside and woods-edge; likes drier soils than other *Monardas*

grape hyacinth (*Muscari armeniacum*) blue violet flowers like inverted clusters of grapes in early May, foliage goes dormant in July, reappears in fall, 6" stalks.

daffodil (*Narcissus* species or hybrid such as variety King Alfred or Dutch Master) yellow, white or bicolor trumpet-shaped flowers in May; range of heights from 4 - 24" available

catmint (*Nepeta Mussinii*) fragrant grey mounded foliage, lavender-blue or white flowers May-June and sporadically through summer; 12"-18"

peony (*Paeonia lactiflora*) large white, red or pink flowers in late May-June, rarely yellow flowers; 3-4' dark green leafy plant

patrinia (*Patrinia scabiosifolia*) 2' chartreuse flowers in dense round-topped clusters in August

fountain grass (*Pennisetum alopecuroides*) fountain spray of silvery-rose plumes in August, late to begin growth in spring, covers spring bulb plants well; 3'

husker red penstemon (*Penstemon x digitalis* 'Husker Red') maroon leaves spring and fall, 3' stalks of white flowers June-July followed by maroon seedheads

Russian sage (*Perovskia atriplicifolia*) 3-4' gray-green airy plant, light purple flowers in July-early August, entire plant fragrant, semi-evergreen

tall phlox (*Phlox paniculata*) fragrant domed clusters of flowers pink, violet tones or white in July; 3-4'

variegated Solomon's seal (*Polygonatum odoratum variegatum*) strongly arching stems mature at 2' tall, striking white edged leaves; creamy white flowers dangle from bottom of arch in May-June, followed by blue berries

Christmas fern (*Polystichum acrostichoides*) 12" evergreen mound like a dark green Boston fern

Bethlehem sage, lungwort (*Pulmonaria saccharata*) Large leaves with silvery gray spots, rosy buds that open into violet blue flowers in May; 12"
 mountain mint (*Pycnanthemum virginianum*) fragrant in all parts, 24-30" tall, columnar with narrow dark green leaves; white button flowers top the stems in June-July; these 1/4" to 1/2" buttons have a greenish-white cast to them appropriate to their minty smell. Dries and cuts well. Spreads rapidly into a mat via underground runners
 culinary sage (*Salvia officinalis*, including varieties with variegated or other-colored leaves) semi-evergreen, 18" tall, violet flowers in spikes, May-June
 burnet (*Sanguisorba obtusa*) ferny 18" mound of foliage; 24-30" stems bear pink bottlebrush flowers in July; more attractive, less weedy than related burnets
 Bouncing Bet (*Saponaria officinalis*) phlox-like flowers on 3' tall stems in July-August; pink or white
 littlebluestem (*Schizachyrium scoparium*) narrow upright, 2-3' clump-forming grass native to North American prairie and woods edge/oak openings; coppery glow begins in late fall and lasts throughout winter; spreads by seed
 October daphne (*Sedum sieboldii* 'October Daphne') blue green leaves edged in maroon, rose flowers in September, 12" mound
 hens and chicks (*Sempervivum* species and hybrids) evergreen rosettes of green, maroon and variegated foliage, 2- 4"
 lamb's ears (*Stachys lanata*) woolly grey foliage, 18-24" tall mauve flowers on grey furry stalks in June-July need to be removed after flowering is done to maintain groundcover effect; 10" tall variety 'Silver Carpet' does not bloom, so does not need to be cut back after flowering
 large-flowered comfrey (*Symphytum grandiflorum*) dense colonizer, yellow white flowers 12" tall in May, large leaves attractive all summer
 lemon thyme (*Thymus x citriodorus*) evergreen, tiny leaf perennial with the scent of lemon; pinkish flowers in June; 6-12"; varieties Silver Queen and Aureus white variegated and golden, respectively
 valerian, garden heliotrope (*Valeriana officinalis*) white fragrant flowers on 2-3' stems in June

Annuals (in alpha order by botanical name):

dill (*Anethum graveolens*)
 sweet Annie (*Artemisia annua*)
 pot marigold (*Calendula officinalis*)
 chicory (*Cichorium intybus*)
 heliotrope, cherry pie plant (*Heliotropum arborescens*)
 sweet alyssum (*Lobularia maritima*)
 scented stock, evening scented stock (*Matthiola incana*)
 bellis of Ireland (*Molucella laevis*)
 true myrtle (*Myrtus communis*)
 flowering tobacco (*Nicotiana glauca*)
 geranium (*Pelargonium hortorum*)
 parsley (*Petroselinum*)
 perilla (*Perilla frutescens*)
 petunia (*Petunia grandiflora*)
 marigold (*Tagetes patula* or *erecta*)
 marigold "gem" types (*Tagetes minuta* 'Lemon Gem', 'Tangerine Gem' etc.)
 nasturtium (*Tropaeolum majus*)
 violet, pansy (*Viola*)

Shrubs and Trees (in alpha order by botanical name):

fir - (*Abies concolor*, *Abies fraseri*, *Abies balsamea*) slow-growing pyramidal evergreen trees, 25-60' tall
 serviceberry, shad, shadblow, juneberry (*Amelanchier canadensis*) - smooth grey bark, white fragrant late April - early May flowers, reddish fruit in June for birds, apricot fall color; 15-25' spreading tree
 river birch (*Betula nigra*) rounded shape reaching a height of 40 - 70' and 40 - 60' in spread; bark: dark reddish brown and deeply furrowed; yellow fall color

boxwood (*Buxus microphylla koreana*) 3' x 4' broadleaf evergreen, a billowy mound, good lustrous green, no significant flower

sweetshrub, Carolina allspice, pineapple shrub, strawberry shrub (*Calycanthus floridus*) suckering shrub, to 10' tall, dark red to red-brown flowers in May; all parts of the plant fragrant with scent like strawberry

blue mist spirea (*Caryopteris x clandonensis*) 3-4' round shrub, grey-green leaves, flowers and twigs all fragrant; small blue flowers in showy flat clusters in August

northern catalpa, hardy catalpa (*Catalpa speciosa*) 50' irregularly oval tree with large leaves and unmistakable "cigar" seed pods that hang after leaves fall; fragrant white flowers in conical upright clusters in June

katsura (*Cercidiphyllum japonicum*) - pyramidal tree, red-tipped branches in dormant season; 40-50'

Hinoki falsecypress (*Chamaecyparis obtusa*) irregular pyramidal shape, fan-shaped clusters of evergreen foliage, moderate growth rate to 10'; much more open in form than the dwarf Hinoki; very good black green in winter

yellowwood (*Cladrastis lutea*; a.k.a. *Cladrastis kentuckea*) 30-50' tree, wider spreading than tall. Flowers are in large, white fragrant, pendant clusters in June. Foliage mostly disease-free, good gold in fall. Mature bark is smooth, grey, beech-like. These trees are often low branched or multiple-stemmed. Member of the pea family, able to fix atmospheric nitrogen, so its fallen leaves are a net gain for nitrogen levels in surrounding soil.

summersweet (*Clethra alnifolia*) - erect shrub, white or pink fragrant flowers in July, good fall color; 5-8' tall x 4-5' wide; variety 'Butterfly' a 3' dwarf; all forms attractive to hummingbirds

redtwig dogwood (*Cornus alba sibirica* 'Elegantissima') - white edged leaves, red twigs in winter, 8' x 12'; flowers white on old stems, blue berries in midsummer favored by birds - but flower and fruit usually not present because shrub is pruned hard to encourage new red stems

winged euonymus (*Euonymus alatus*) spreading shrub to 12', deep red fall color, interesting corky bark

dwarf Fothergilla (*Fothergilla gardenii*) - slender, crooked, often spreading branches, dense mound at maturity, slow grower, 2'-3' in height, similar or greater in spread; white, fragrant flowers April to early May appear before leaves.

ginkgo (*Ginkgo biloba*, male variety such as Sentry) - columnar tree, interesting fan-shaped leaf turns gold in fall, knobby branches add character in winter; fast growing in youth; to 60'

spring witchhazel (*Hamamelis vernalis* and *Hamamelis mollis* hybrids such as 'Arnold's Promise,' 'Diana,' and 'Jelena') 10' tall, shrubby to 10' wide; branches covered with small, yellow to yellow-orange, fragrant flowers in February-March; good butter yellow or apricot fall color

American witchhazel (*Hamamelis virginiana*) - upright spreading, grey barked large shrub, small yellow flowers along the branches in November, good gold color in fall; to 20' x 20'

seven-son flower (*Heptacodium miconioides*) upright shrub or small tree, 15-20' and narrow; fragrant white flowers in clusters, September; attractive pink seed pods in October; no significant fall color; mature bark is white, peeling - very attractive in winter

golden hops (*Humulus lupulus aureus*) dense, almost shaggy, vine with gold foliage, visually insignificant flowers made decorative by dangling bracts -- the hops; very fast to grow, can reach 25'

climbing hydrangea (*Hydrangea anomala petiolaris*) glossy round leaves, large white lace-cap flowers in late May or early June; can grow on walls and tree trunks without support, up to 40'; honey-colored exfoliating bark attractive in winter

Manhattan Blue juniper (*Juniperus virginiana* 'Manhattan Blue') blue-green narrow pyramidal evergreen, tight habit (as opposed to rank, splaying branches of some in this species); 20-25' tall and 5-6' wide; can be kept smaller with regular pruning

beauty bush (*Kolkwitzia amabilis*) 10-15' arching shrub, fragrant pink flowers in June

golden vicary privet (*Ligustrum x Golden Vicary*) dense, upright, multi-stemmed shrub with yellow-green foliage, new foliage bright yellow; creamy white flowers in May-June, black fruit in September-October. 10-12' high and wide.

Chinese spicebush (*Lindera angustifolia*) 10'-12' upright shrub with fragrant foliage, twigs and seeds; small yellow flowers in abundance in April; foliage is semi-evergreen, attractive in fall (orange) and through winter (parchment); part shade and shade.

spicebush (*Lindera benzoin*) 10' upright shrub native to North American moist woods; small yellow flowers in abundance in April, spicy-fragrant seeds; twigs and leaves fragrant when bruised; its foliage is the larval food for spicebush swallowtail butterfly.

sweetgum (*Liquidambar styraciflua*) 60' tree, pyramidal when young, more rounded at maturity, good red fall color, star shaped leaves, mace-shaped seed pods

tulip tree, tulip poplar (*Liriodendron tulipifera*) very large tree with curious flat-tipped leaves; green "tulips" marked with salmon and cream open in June; best viewed from upper floors of a home or looking down on a tree growing on lower ground, since flowers are often missed when the tree is viewed from its base

Fragrant honeysuckle (*Lonicera fragrantissima*) 6-10' tall and round. Unmatched for very early spring fragrance. A wallflower in terms of leaf and form -- even a bit shabby in winter for its thin, arching and somewhat disordered branches. Yet good for a background or hedge. Full sun to part shade.

sweet bay magnolia (*Magnolia virginiana*) large leaf and repeat bloom make this magnolia especially nice; large, scented white flowers open May - August; 10-20' wide and tall

dwarf Oregon grapeholly (*Mahonia aquifolium compactum*) - broadleaf evergreen, leaves sharp edged like holly, maroon or bronze in winter, leathery green in summer, yellow flowers in May, blue berries late summer; 3' x 3'-4'

apple (*Malus* varieties) need two varieties for fruit-set, or a crabapple as pollinator

sargent crabapple (*Malus x sargentii*) - 6-8' tall, 10' wide tree, fragrant white flowers in spring follow pink buds, cherry-size red fruit persists through winter, disease resistant, alternate year bloomer

dawn redwood (*Metasequoia glyptostroboides*) - pyramidal tree, branched very low to the ground, shaggy reddish or cinnamon color bark, needle-like leaves drop each fall; to 60'

bayberry (*Myrica pensylvanica*) - lustrous scented foliage, interesting scented grey berries on the female; 6' x 6'; male and female plants needed for berries

sourwood (*Oxydendrum arboreum*) lustrous dark green leaves turn yellow, red & purple in fall; white fragrant flowers in June; attractive red seed capsules in August are even showier than flowers and persist into fall to contrast with the fall foliage color; 25-30' in height, 20' spread; pyramidal with rounded top and drooping branches.

mock orange (*Philadelphus x virginicus*) - white fragrant flowers like single roses ranged along the stems in June, narrow upright shrub to 15' tall

white spruce (*Picea glauca*) strongly pyramidal evergreen; blue-green; 30-50' tall and 1/3 as wide; with very small cones as compared to Colorado spruce but often mistaken for it

white pine, eastern white pine (*Pinus strobus*) evergreen tree, +70', fast growing, pyramidal in youth then irregular and often picturesque in outline with age; maintains limbs and foliage to the ground in open situations, loses lower limbs over time in shade; needles long, fine, "soft", luminous light green

cherry (*Prunus* varieties) sour "pie cherries" are self-fertile; sweet cherries require two varieties for fruit-set

edible pear (*Pyrus varieites*) perhaps the simplest fruit tree to grow, with fewest pest problems and no need for additional pollinator

callery pear, flowering pear (*Pyrus calleryana* varieties such as 'Chanticleer') narrow columnar tree, 30' tall, 16 to 20' wide, abundant white flowers in April or early May (an improvement over 'Aristocrat'), good red-purple to gold fall color, fast growth (Chanticleer is also known as 'Select', 'Cleveland Select' and 'Stone Hill')

Northern Lights rhododendron, deciduous rhododendron (*Rhododendron* of the 'Northern Lights' series, such as 'Rosy Lights,' 'White Lights,' 'Yellow.. etc.) 4-5 narrow, vase-shaped shrub, huge fragrant flowers for Mother's Day each May, coarse foliage a nice contrast to finer textures in summer; dependable performer

laceleaf sumac (*Rhus typhina laciniata* or *Rhus typhina dissecta*) 15-20' tall tree, suckers to form thickets, ferny foliage orange to scarlet in fall, red seed clusters attractive in winter as are the contorted branches (like a stag's horns)

clove currant (*Ribes odoratum*) native North American shrub with fragrant yellow flowers shortly after forsythia - early May; 6-8' tall and round

black locust, common locust, yellow locust, white locust (*Robinia pseudoacacia*) rough barked large tree usually very high branched with upper branches sinuous in outline; June flowers in pendant white clusters very fragrant; no significant fall color

rose (*Rosa* hybrids and hybrid teas) large flowers in all color, often fragrant, 2-6'; usually grafted to wild rose roots

American elderberry (*Sambucus canadensis*) coarse, rather gangly shrub native to moist meadows and wetlands of North America; white flat-topped cluster flowers in June; blue black berries in August are edible (wine, pies) and attractive to birds; 10-12' tall and wide

elderberry, European elderberry (*Sambucus nigra* varieties) multi-stemmed shrub, often broad and rounded with branches spreading and arching, fragrant white lacecap flowers in abundance in June, blue-black tiny fruit in flat-topped clusters in July eaten by birds, large coarse leaves, available in variegated, cutleaf and golden leaf forms ('Madonna', 'Laciniata' and 'Aurea') grows vigorously and looks good throughout growing season, size varies significantly with habitat (shorter and more open in full shade), up to 12' tall and round.

Korean lilac, palibin lilac, dwarf lilac (*Syringa meyeri*) 4-6' tall and wide, violet flowers in May, fragrant

dwarf lilac (*Syringa patula* 'Miss Kim') 4-6' tall and wide, fragrant violet flowers in late May or early June; leaves smaller than and flowers in smaller clusters than common lilac

tree lilac, Japanese tree lilac (*Syringa reticulata*) oval-round small tree 20-30' tall and somewhat narrower; fragrant white flowers in June later than common lilac; glossy cherry-like bark

lilac (*Syringa vulgaris* hybrid) - 10' or taller shrub, fragrant violet, white or pink flowers in May-June; variety 'Charles Joly' is a magenta double-flowered form, 'Victor Lemoine' is a double lilac colored form; many others exist in various colors, single or double forms

columnar arborvitae (*Thuja o.* 'Nigra') dense pyramidal evergreen, slowly grows to 15' and taller; keeps good green color in winter

basswood (*Tilia americana*) forest tree sometimes planted as shade tree, 50', oval in outline; masses of fragrant white flowers in June; golden in fall

koreanspice viburnum (*Viburnum carlesii*) rounded, dense shrub, 4-5' x 4-8', white flowers late April to early May, outstanding fragrance.

leatherleaf viburnum (*Viburnum rhytidophyllum*) 10-15' high with similar spread, yellowish white flowers in mid May.

Burkwood viburnum (*Viburnum x Burkwoodii*) evergreen or semi-evergreen shrub, 6' x 6', white hemispherical flower clusters touched with pink in May; very fragrant

wisteria (*Wisteria chinensis* hybrids) large vine which can climb a support or be trained to a tree form, has dangling purple, rose or white clusters like grapes in June; to 75'

	Touch	Sound	Scent	Taste	Notes
<u>Perennials and vines:</u>					
alyssum, perennial alyssum (Aurinia saxatilis)	x		x		
asparagus	x	x		x	
bee balm / horsemint (Monarda didyma, M. fistulosa)			x		
bergenia (Bergenia cordifolia)	x	x			
blanket flower (Gaillardia x grandiflora)			x		
bleeding heart (Dicentra spectabilis)			x		
blue mist flower (Eupatorium / Conoclinium coelestinum)			x		
boneset, thoroughwort, white Joe Pye (Eupatorium perfoliatum)	x		x		
Bouncing Bet (Saponaria officinalis)			x		
burnet (Sanguisorba obtusa)				x	
butterfly bush (Buddleia davidii)			x		
butterfly weed (Asclepias tuberosa)	x				
calamint (Calamintha Nepeta)			x		
catmint (Nepeta Mussinii)			x		
clematis, blue bush clematis (Clematis heracleifolia)			x		
clematis, sweet autumn c. (Clematis terniflora)			x		
colewort, crambe (Crambe cordifolia)	x		x	x	
comfrey, large-flowered comfrey (Symphytum grandiflorum)	x				
cottage pinks (Dianthus plumarius)	x		x		
cranesbill, bigroot perennial gera. (Geranium macrorrhizum)					
cranesbill, perennial geranium (Geranium maculatum)	x		x		
crown imperial (Fritillaria imperialis)			x		
daffodil (Narcissus)			x		
daylily, esp. lemon lily (Hemerocallis Lilioasphodelus)			x	x	
fairy candle (Cimicifuga racemosa)			x		
fall fairy candle (Cimicifuga ramosa, C. simplex)			x		
false indigo (Baptisia australis)		x			

	Touch	Sound	Scent	Taste	Notes
<u>Perennials and vines (Cont'd.)</u>					
false sweet flag, variegated false s. f. (<i>Acorus calamus</i>)	x		x		
fennel, bronze fennel, giant fennel (<i>Foeniculum vulgare</i>)	x		x	x	
gas plant (<i>Dictamnus purpureus</i>)			x		
germander (<i>Teucrium chamaedrys</i>)			x		
ginger (<i>Asarum canadense</i>)	x		x		
grape hyacinth (<i>Muscari armeniacum</i>)			x		
grapes (<i>Vitis</i>)			x	x	
grass, blue fescue, sheep's fescue (<i>Festuca ovina glauca</i>)	x				
grass, blue oat grass (<i>Helictotrichon sempervirens</i>)	x				
grass, feather reed grass (<i>Calamagrostis acutiflora stricta</i>)		x			
grass, prairie dropseed (<i>Sporobolus heterolepis</i>)	x		x		
grass, little bluestem (<i>Schizachyrium scoparium</i>)		x			
grass, maiden grass (<i>Miscanthus sinensis</i>)	x	x			
grass, northern sea oats, wild oats (<i>Chasmanthium latifolium</i>)	x	x			
grass, ravenna grass (<i>Erianthus ravennae</i>)	x	x			
grass, satin-, golden-, Japanese satin- grass (<i>Hakonechloa macra</i> 'Aureola')	x				
grass, sweet grass (<i>Hierochloa odorata</i>)			x		
hens and chicks (<i>Sempervivum</i> species and hybrids)	x				
hosta, white fragrant hosta (<i>Hosta plantaginea</i>)			x		
tall penstemon, foxglove beardtongue (Penstemon x <i>digitalis</i> 'Husker Red')			x		
hyacinth, Dutch hyacinth (<i>Hyacinthus orientalis</i>)			x		
Irish moss (<i>Arenaria verna caespitosa</i>)	x				
Joe Pye (<i>Eupatorium purpureum</i>)			x		
rough Joe Pye, purple-leaf Joe Pye (<i>Eupatorium rugosum</i> , E. 'Chocolate')			x		
white snakeroot, white sanicle (<i>Eupatorium maculatum</i>)	x		x		

	Touch	Sound	Scent	Taste	Notes
<u>Perennials and vines (Cont'd.)</u>					
kale, sea kale, sea crambe (Crambe maritima)	x		x	x	
lady's mantle (Alchemilla mollis)	x				
lamb's ears (Stachys lanata)	x				
lavender (Lavandula angustifolia)	x		x		
lily of the valley (Convallaria majalis)			x		
lily, oriental lily (Lilium hybrids)			x		
lovage (Levisticum)			x	x	
lungwort, Bethlehem sage (Pulmonaria saccharata)	x				
mint (Mentha spp.)	x		x	x	
mountain mint (Pycnanthemum virginianum)			x		
onion, chives, garlic: Allium spp.			x	x	
chives (Allium schoenoprasum)			x	x	
curly chives (Allium senescens glaucum)				x	
garlic chives, Chinese chives (Allium tuberosum)				x	
oregano (Origanum vulgare)			x	x	
pasque flower, windflower (Pulsatilla vulgaris)	x				
patrinia (Patrinia scabiosifolia)			x		
pearly everlasting (Anaphalis margaritacea)	x				
peony (Paeonia lactiflora)			x		
phlox, tall phlox (Phlox paniculata)			x		
plume poppy (Macleaya cordata)	x		x		
pussy's toes, ladies' tobacco, everlasting (Antennaria dioica)	x				
rhubarb (Rheum)				x	
rue, (Ruta graveolens)			x		
Russian sage (Perovskia atriplicifolia)	x		x		
sage, culinary sage (Salvia officinalis)	x		x	x	
sea pinks (Armeria maritima)	x				
sedum, October daphne (Sedum sieboldii)	x				
silvermound (Artemisia schmidtiana)	x		x		

	Touch	Sound	Scent	Taste	Notes
<u>Perennials and vines (Cont'd.)</u>					
Solomon's seal, sweet variegated S. s. (Polygonatum odoratum variegatum)	x		x		
sorrel (Rumex acetosa)				x	
sweet woodruff (Galium odoratum)			x		
thyme, lemon thyme (Thymus x citriodorus)			x		
valerian, garden heliotrope (Valeriana officinalis)			x		
wintergreen (Mentha piperita)			x	x	
<u>Annuals</u>					
bells of Ireland (Molucella laevis)	x		x		
chicory (Cichorium intybus)				x	
dill (Anethum graveolens)	x		x	x	
flowering tobacco (Nicotiana glauca)	x		x		
geranium (Pelargonium hortorum)	x		x		
heliotrope, cherry pie plant (Heliotropium arborescens)			x		
marigold "gem" types (T. minuta)			x	x	
marigold (Tagetes patula or erecta)			x		
nasturtium (Tropaeolum majus)				x	
parsley (Petroselinum)	x		x	x	
perilla (Perilla frutescens)			x	x	
petunia (Petunia grandiflora)	x		x		
pot marigold (Calendula officinalis)				x	
scented stock (Matthiola incana)			x		
sweet alyssum (Lobularia maritima)			x		
sweet Annie (Artemisia annua)			x		
true myrtle (Myrtus communis)			x		
violet, pansy (Viola)			x		

	Touch	Sound	Scent	Taste	Notes
<u>Weeds</u>					
ground ivy (<i>Glechoma hederacea</i>)			x		
toadflax, butter-n-eggs (<i>Linaria vulgaris</i>)			x		
tree of heaven (<i>Ailanthus altissima</i>)			x		
<u>Shrubs and Trees</u>					
apple (<i>Malus</i> , need two types)				x	
arbovitae, white cedar (<i>Thuja occidentalis</i>)	x		x		
azalea, deciduous azalea (<i>Rhododendron</i> Exbury, Lights etc.)			x		
basswood (<i>Tilia americana</i>)			x		
bayberry (<i>Myrica pensylvanica</i>)	x		x		
beauty bush (<i>Kolkwitzia amabilis</i>)			x		
birch, river birch (<i>Betula nigra</i>)	x				
black walnut (<i>Juglans nigra</i>)				x	
bluebeard, blue mist spirea (<i>Caryopteris x clandonensis</i>)			x		
blueberry (<i>Vaccinium</i>)				x	
boxwood (<i>Buxus microphylla</i> koreana)	x		x		
Burkwood viburnum (<i>Viburnum x Burkwoodii</i>)			x		
burning bush, winged euonymus (<i>Euonymus alatus</i>)	x				
catalpa, northern catalpa, hardy catalpa (<i>Catalpa speciosa</i>)			x		
cherry (<i>Prunus</i>)	x				
clove currant (<i>Ribes odoratum</i>)			x		
cornelian cherry (<i>Cornus mas</i>)				x	
crabapple, sargent crabapple (<i>Malus x sargentii</i>)			x	x	
dawn redwood (<i>Metasequoia glyptostroboides</i>)	x				
elderberry (<i>Sambucus</i> spp.)			x		
falsecypress, Hinoki falsecypress (<i>Chamaecyparis obtusa</i>)	x				
fir, white-, fraser-, balsam fir (<i>Abies concolor</i> , <i>A. fraseri</i> , <i>A. balsamea</i>)	x		x		
fothergilla, dwarf Fothergilla (<i>Fothergilla gardenii</i>)			x		

	Touch	Sound	Scent	Taste	Notes
<u>Shrubs and Trees (Cont'd.)</u>					
ginkgo (<i>Ginkgo biloba</i>)	x				
grapeholly, dwarf Oregon grapeholly (<i>Mahonia aquifolium compactum</i>)	x				
hazelnut (<i>Corylus americana</i>)				x	
hickory (<i>Carya ovata</i>)				x	
honeysuckle, fragrant honeysuckle (<i>Lonicera fragrantissima</i>)					
hops, golden hops (<i>Humulus lupulus aureus</i>)	x		x		
hydrangea, climbing hydrangea (<i>Hydrangea anomala petiolaris</i>)			x		
juniper, red cedar (<i>Juniperus virginiana</i>)			x		
katsura (<i>Cercidiphyllum japonicum</i>)			x		
koreanspice viburnum (<i>Viburnum carlesii</i>)			x		
lilac (<i>Syringa</i> spp.)			x		
lilac, tree lilac, Japanese tree lilac (<i>Syringa reticulata</i>)	x		x		
locust, black-, common, yellow-, white locust (<i>Robinia pseudoacacia</i>)			x		
magnolia, sweet bay magnolia (<i>Magnolia virginiana</i>)	x		x		
mock orange (<i>Philadelphus x virginicus</i>)	x		x		
pear, callery pear, flowering pear (<i>Pyrus calleryana</i>)			x		
pear, edible pear (<i>Pyrus</i>)				x	
pine, white pine, eastern white pine (<i>Pinus strobus</i>)	x		x		
privet, golden vicary privet (<i>Ligustrum x Golden Vicary</i>)			x		
quince (<i>Chaenomeles</i>)	x				
raspberry				x	
redtwig dogwood (<i>Cornus alba</i> , <i>C. sibirica</i>)	x				
rose (<i>Rosa</i> hybrids)			x		
sassafras (<i>Sassafras albidum</i>)			x		
serviceberry, shad, shadblow, juneberry (<i>Amelanchier canadensis</i>)			x	x	
seven-son flower (<i>Heptacodium miconioides</i>)			x		
sourwood (<i>Oxydendrum arboreum</i>).					

