INSECT	WHERE TO FIND THEM	DAMAGE SYMPTOMS	CONTROL PRACTICES
Cool-season insect pests			
Japanese beetle	Sandy, loamy soils	Soil samples to count population	1. determine species; 2. target and time controls accordingly; 3. water in grub insecticide thoroughly in irrigated turf
European chafer	Poorly irrigated turf	Soil samples to count and identify population	1. determine species; 2. less susceptible to insecticides than most other grub species; 3. target and time controls accordingly; 4. water in grub insecticide thoroughly
Oriental beetle	Turf in the Northeast United States	Look in hot/dry soils a few weeks ahead of Japanese beetles	1. less susceptible to insecticides so time carefully; 2. may need a followup treatment; 3. water in grub insecticide thoroughly
Asiatic garden beetle	Turf in the northeast United States	Soil samples to find tiny grubs	1. may be less sensitive to many turf insecticides and can establish in place of other grubs controlled by these products; 2. just a nuisance, but that could change; 3. water in grub insecticide thoroughly
Northern masked chafers	Roots and organic matter	Look for broken off roots or damage to root hairs	1. determine species; 2. target and time controls accordingly; 3. most turf insecticides work reasonably well
Little billbug	Turf in eastern and midwestern United States	Target emergence from hibernating sites before they lay eggs	1. determine species and appropriate timing; 2. target emergence; 3. can use degree-day model; 4. applications at larvae stage not as successful
Bluegrass billbug	Predominant species in eastern United States	Target emergence from hibernation before they lay eggs	1. determine species and timing; 2. target emergence; 3. can use degree-day model; 4. applications at larvae stage not as successful; 5. may use endophyte-enhanced turf cultivars
Uneven billbug	Turf in eastern United States	Active adults in early spring and late fall	1. determine species and timing; 2. target emergence; 3. treat accordingly; 4. applications at larvae stage not as successful
Denver billbug	Turf in Rocky Mountains and northern Plains states	May overwinter as medium/large larvae or adults	1. determine species and timing; 2. target emergence; 3. treat accordingly; 4. applications at larvae stage not as successful
Hairy chinch bugs	Midwest and mid-Atlantic areas	Damage occurs when turf has heat or moisture stress	1. identify chinch bugs; 2. apply appropriate insecticides; 3. damage may still remain, especially if turf is in summer dormancy; 4. may use endophyte-enhanced turf cultivars
Webworms	Several species in northern United States	Damage may be severe or sporadic; may not need attention	1. treatments most effective 2 to 3 weeks after peak moth flight; 2. timing reaches small, susceptible caterpillars as they become active; 3. endophyte-enhanced turf cultivars are resistant to some species

* Check with your county cooperative extension agent for insecticide recommendations

SOURCE: RICK L. BRANDENBURG & PATRICIA J. VITTUM, LANDSCAPE MANAGEMENT, APRIL 1999, PAGES 40-44.

COOL-SEASON TURFGRASS DISEASES

DISEASE	SUSCEPTIBLE GRASS	FAVORABLE CONDITIONS	MANAGEMENT STRATEGIES
Brown patch/ rhizoctonia blight	TALL FESCUE, ryegrass, Kentucky bluegrass, fine fescue	hot/wet	1. avoid excessive nitrogen; 2. avoid excessive watering and poor drainage; 3. increase air circulation and sunlight
Dollar spot	BLUEGRASS, fine fescue, ryegrass	moderate/wet leaves and dry soil	1. avoid nitrogen deficiency; 2. choose resistant grass varieties; 3. water to increase growth
Gray leaf spot	PERENNIAL RYEGRASS, tall fescue	warm/humid; wet foliage (often late summer and fall)	1. avoid stress on turf; 2. water adequately but with extending time foliage is wet; 3. avoid high fertilizer in summer; 4. reduce soil compaction; 5. young ryegrass plantings are more sensitive than mature
Leaf spot/melting out	KENTUCKY BLUEGRASS, fine fescue, ryegrass, tall fescue	leaf spot — cool/wet (spring/fall); melting out — hot/dry (summer)	1. raise cutting height; 2. mow frequently to avoid stress; 3. avoid excessive nitrogen; 4. avoid light frequent watering and prolonged wet grass
Necrotic ring spot	KENTUCKY BLUEGRASS, fine fescue	warm/extremes in soil moisture	1. avoid low mowing heights; 2. reduce excessive thatch; 3. use Kentucky bluegrass and perennial mixtures; 4. avoid excessive watering or drought stress; 5. use slow-release fertilizer
Powdery mildew	KENTUCKY BLUEGRASS, fine fescue	moderate/high humidity; shade	1. reduce shade; 2. increase air circulation by removing surrounding vegetation; 3. use resistant Kentucky bluegrass varieties
Pythium blight	PERENNIAL RYEGRASS and new seedlings of all types	very hot/wet	1. improve soil drainage; 2. increase air circulation by removing surrounding vegetation 3. avoid excess watering; 4. avoid high rates of nitrogen
Red thread	PERENNIAL RYEGRASS, FINE FESCUE	moderate/wet foliage	1. balanced fertilization program; 2. promote growth by aeration and watering; 3. use resistant varieties
Rust	PERENNIAL RYEGRASS, Kentucky bluegrass	moderate/wet foliage, dry soil	1. avoid nitrogen deficiency; 2. use resistant varieties; 3. water if dry and promote growth
Summer patch	KENTUCKY BLUEGRASS, fine fescue	warm/extremes in soil moisture (fluctuating from wet to dry)	1. avoid low mowing thatch buildup; 2. maintain soil pH between 6 and 7; 3. frequent watering in dry periods to avoid heat stress; 4. use slow-release nitrogen; 5. use Kentucky bluegrass and perennial ryegrass mix

SOURCE: JOSEPH W. RIMELSPACH & MICHAEL J. BOEHM, LANDSCAPE MANAGEMENT, MAY 1999, PAGE 52

* Turfgrass in all capital letters have highest potential for severe problems
* Check your county cooperative extension agent for fungicide recommendations

TURFGRASS DISEASES BY SEASON

TURF TYPE	SPRING	SUMMER	FALL
Kentucky bluegrass	snow mold; leaf spot; yellow patch; red thread; fairy ring	melting out; necrotic ring spot/summer patch; dollar spot; brown patch; powdery mildew; rust	leaf spot; red thread; rust; powdery mildew
Perennial ryegrass	snow mold; red thread; leaf spot/blight; fairy ring	brown patch; dollar spot; pythium; rust; red thread; leaf spot/blight; gray leaf spot	rust; red thread; leaf spot/blight; gray leaf spot
Tall fescue	snow mold; leaf spot; fairy ring	brown patch	leaf spot
Fine fescue	red thread; leaf spots; fairy ring	red thread; dollar spot	red thread; leaf spots

* These are general time frames for disease occurrence. Depending on local weather and site conditions, disease outbreaks and the duration of activity may vary. Remember the genetic susceptibility of the grass and the environment are the predominant factors driving the occurrence of disease development.

** All the above turfgrasses are prone to fairy ring when there are favorable weather conditions.

Source: Joseph Rimelspach & Michael Boehm, *Landscape Management,* May 1999, page 48.

WARM-SEASON TURFGRASS DISEASES

Disease	Susceptible grass	Favorable conditions	Management strategies
Brown patch	ST. AUGUSTINEGRASS, ZOYSIAGRASS, all major warm-season grasses	moisture/warm temperatures, heavy nitrogen applications	1. moderate nitrogen applications; 2. water when soil is dry and let it soak in; 3. apply fungicide when disease is diagnosed
Dollar spot	BERMUDAGRASS, ZOYSIAGRASS	dry soil/surface moisture, mild weather, low nitrogen	1. moderate nitrogen applications; 2. adequate morning irrigation to soil; 3. moderate fungicide applications to control
Pythium blight	OVERSEEDED COOL-SEASON GRASSES, bermudagrass, zoysiagrass	moist/warm (cool days for cool-season grasses)	1. use treated seed; 2. delay overseeding until cool weather or as late as possible; 3. water sparingly during disease activity times
Gray leaf spot	ST. AUGUSTINEGRASS	humid/warm, high nitrogen, semishade	1. use nitrogen sparingly; 2. water in the morning; 3. water infrequently but thoroughly; 4. treat with appropriate fungicides
Spring dead spot	BERMUDAGRASS	high nitrogen/low potassium, heavy thatch	1. remove thatch; 2. avoid excessive nitrogen; 3. promote slow, even growth for winter hardiness; 4. use appropriate fungicides

* Turfgrass in all capital letters have highest potential for severe problems.

* *Check your county cooperative extension agent for fungicide recommendations.

SOURCE: ED A. BROWN, LANDSCAPE MANAGEMENT, MAY 1999, PAGES 42-46

AIR & SOIL TEMPERATURES

Cool-season grasses

AIR TEMPERATURE		SOIL TEMPERATURE	
Heat kill likely	131°		
Shoot growth ceases	90°	90°	Shoot growth ceases
		77°	Root growth ceases
		70°	Maximum temperature for root growth of any consequence
		70°	Time to plant grasses in late summer
Optimum temperature for shoot growth*	60-75°	60-75°	Optimum temperature for shoot growth
		50-65°	Optimum temperature for root growth
Shoot growth ceases	40°	40°	Shoot growth ceases
		33°	Root growth ceases
		20°	Low temperature kill possible if temperature subsequently drops rapidly below 20° F

*Optimum turf performance may not coincide with optimum root and/or shoot performance

Warm-season grasses

AIR TEMPERATURE		SOIL TEMPERATURE	
Heat kill likely	140°		
Shoot growth ceases	120°	120°	Shoot growth ceases
		110°	root growth ceases
Optimum temperature for shoot growth	80-95°	80-95°	Optimum temperature for shoot growth
		75-85°	Optimum root growth
		74°	Optimum time to overseed bermudagrass with ryegrass in the fall. Time to plant grasses in the spring.
		64°	Expected sprin root decline is triggered and roots turn brown and die within 1 or 2 days.
Chilling injury resulting in discoloration is possible	50°	50°	Root growth begins to slow below this temperature.
		50°	Chilling injury resulting in discoloration is possible.
Initiation of dormancy occurs resulting in discoloration	50°	50°	Initiation of dormancy occurs resulting in discoloration.
		25°	Low temperature kill possible.

SOURCE: NORTH CAROLINA STATE UNIVERSITY

Symptoms of soil problems

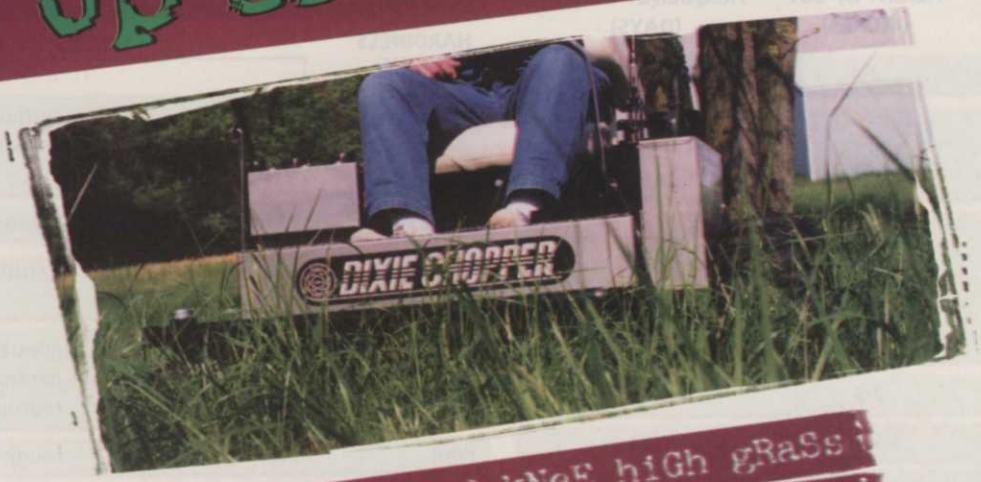
If your turfgrass behaves in the following ways, it's a sign that there's trouble down below, and time to investigate for compaction or nutrient deficiencies:

- shallow but extensive root system
- little or no roots below four inches.
- little or no top growth
- off-color, very chlorotic tissue
- easily wilted
- low density with weeds
- poor response to fertilization and soil applied pesticides
- prolonged wet soil that limits recreational uses
- water easily runs off the turf surface.

Some sites may have all of the above symptoms, while others may have just a few. Some symptoms may take a long time to show (root growth), while others are quickly visible (top growth).

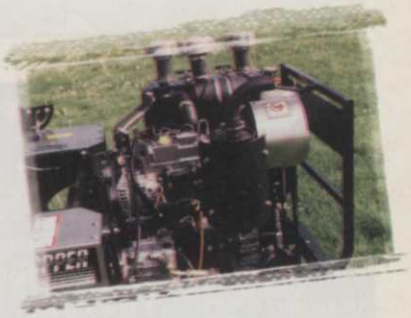
Many other factors can cause the symptoms described above, making a definitive diagnosis nearly impossible. Thus, soil management is often considered an art more than a science.

Is Your Mower Up to This Task?



If ThE tHoUghT of kNeE hiGh gRaSs
CHiLLs yoU, ThEn yOu DON'T hAve
thE RiGht tOOl foR thE JOB.

yOu nEEd
HORSEPOWER



ThRee neW
DieSEl
mODelS

liQuiD*-*-
--cOOled
tURbo*-*-
*-*chArGeD

DIXIE CHOPPER
beCauSe yOu nEEd
TOOLS NOT TOYS

Circle No. 139 on Reader Inquiry Card

DIXIE CHOPPER
The World's Fastest Lawn Mower
800-233-7596
www.dixiechopper.com

TURFGRASS - IDEAL CUT & FREQUENCY

TURFGRASS SPECIES	HEIGHT OF CUT (INCHES)	FREQUENCY OF CUT (DAYS)
Bahiagrass	3-4	10-14
bentgrass		
greens	<0.25	daily
fairways	0.25-0.75	daily-7
Bermudagrass		
greens	<0.25	daily
fairways	0.5-1.5	2-3
athletic fields	0.75-1.5	3-7
home lawns	0.75-1.5	3-7
centipedegrass	2-3	10-14
fine fescues	1.5-2.5	7-14
Kentucky bluegrass	1.5-3.0	7-14
perennial ryegrass	1.5-2.5	7-10
St. Augustinegrass	3-4	7-14
tall fescue	2-3	10-14
zoysiagrass	1-2	10-14

FLOOD TOLERANCE OF SELECTED TREE SPECIES

Very tolerant/ tolerant	Somewhat tolerant	Intolerant
bald cypress	American elm	bitternut hickory
black willow	American holly	black cherry
boxelder	black gum	blackjack oak
eastern cottonwood	burr oak	black oak
green ash	downey hawthorn	black walnut
hackberry	honeylocust	flowering dogwood
nutall oak	red elm	Kentucky coffeetree
overcup oak	river birch	linden
pin oak	southern red oak	loblolly pine
red maple	swamp white oak	mockernut hickory
shingle oak	water oak	post oak
silver maple	willow oak	redbud
sugarberry	winged elm	red mulberry
sweetgum		red oak
sycamore		sassafras
water tupelo		shellbark hickory
		shagbark hickory
		shortleaf pine
		shumard oak
		white oak

PRIMARY SOURCE: WHITLOW, T., H. AND R.W. HARRIS, FLOOD TOLERANCE IN PLANTS: A STATE-OF-THE-ART REVIEW; NATIONAL TECHNICAL INFORMATION SERVICE, U.S. DEPT. OF COMMERCE, AUGUST 1979: 1-161.

RELATIVE HEAT HARDINESS OF 18 TURFGRASSES

HARDINESS RANKING	SPECIES	
Excellent	zoysiagrass Bermudagrass St. Augustinegrass	buffalograss carpetgrass
Good	tall fescue	meadow fescue
Medium	colonial bentgrass creeping bentgrass	Kentucky bluegrass
Fair	Canada bluegrass chewings fescue red fescue	annual bluegrass perennial ryegrass redtop
Poor	Italian ryegrass	rough bluegrass

SOURCE: "TURFGRASS SCIENCE AND CULTURE," PRENTICE-HALL, INC., BY JAMES B. BEARD

MADE FOR THE SHADE

Trees

Scientific name	Zones	Common name
Acer circinatum	1-6	vine maple
Acer palmatum	5-8	Japanese maple
Acer pennsylvanicum	3-8	striped maple
Alnus sp.	2-7	alders
Cercis canadensis	4-9	eastern redbud
Cornus sp.	1-9	dogwoods
Corylus sp.	4-9	hazels
Illex sp.	3-8	hollies
Podocarpus macrophylla	4-9	yew pine
Thuja occidentallis	5-9	arborvitae
Tsuga sp.	3-8	hemlocks

Check with local nurseries or extension service for new, popular cultivars.

Shrubs

Scientific name	Zones	Common name
Berberis sp.	5-8	barberry
Euonymous japonicus	7-9	evergreen euonymous
Fatsia japonica	8-10	fatsia
Illex sp.	3-8	hollies
Ligustrum sp.	3-7	privets
Lonicera sp.	5-7	honeysuckles
Nandina domestica	6-9	heavenly bamboo

Check with local nurseries or extension service for new, popular cultivars.

NO MORE FOUR O'CLOCK SHUFFLE. NO HEAT-STROKE STAGGER.

INTRODUCING

A NEW WAY OF WALKING.

The all-new Hustler™ Hydro WalkBehind will give your operators every ergonomic advantage. It will keep them comfortable and productive longer than any other walk-behind mower. It will make your operation more productive and more profitable.

NEVER TRUDGE AGAIN

The Hustler Hydro WalkBehind will cut more grass, in less time, with less effort. Long term, it will cut more grass, over more mowing seasons, with less maintenance. It was built to finish first. And last.

HUSTLER HYDRO WALK-BEHIND

No numbness.
No cramping.
No more blisters.

Hustler's patented H-Bar™ steering means no cramped forearms, no more numbed fingers. No speed levers to frustrate productivity. Just twist the H-Bar, and go. True zero-degree, counter-rotational turning.

EASY TO LEARN: training time measured in minutes.
EASY TO OPERATE: beats pistol grips hands down.
MORE PRODUCTIVE: effortless control for easy trimming.
SAFER: fully intuitive, firm grasp of controls throughout the mowing process.

ELIMINATES THE NEED FOR STRING TRIMMERS

Circle No. 132 on Reader Inquiry Card

1-800-395-4757

EXCEL INDUSTRIES, INC. | HESSTON, KS 67062 | www.excelhustler.com

HUSTLER®
Out Hustle all the rest™

HERBICIDES FOR BROADLEAF WEED CONTROL IN TURF

COMMON NAME	TRADE NAMES (PRODUCERS)	USES
2,4-D	AM-40, 2,4-D Granules, 2,4-D L. V. Ester Solution; (Riverdale) 2,4-D Amine 4, 2,4-D LV4, SEE 2, 4-D LV4 (Riverside/Terra International) Weedone LV4 (Rhone Poulenc)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + dicamba	81 Selective Weedkiller (Riverdale) Four Power Plus (Turfgo/United Horticultural Supply) Lawn Weed Killer (Bonide) Triple D Lawn Weed Killer (Rockland)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + dichlorprop	2D + 2DP Amine, Turf D + DP (Riverdale) Fluid Broadleaf Weed Control (The Scotts Co.) Weedone DPC Ester, Weedone Amine (Rhone Poulenc)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + dichlorprop +dicamba	Strike 3 (Riverside/Terra International) Super Trimec (PBI/Gordon)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + mecoprop	2D Amine + 2 MCPP (Riverdale) 2 Plus 2 (ISK Biosciences) MCPP-2-4D (Cleary)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + MCPP + dicamba	Bentgrass Selective Weed Killer (LESCO) Brushfire, Brush-out, Brush-Whacker, HS-130, SNS-2000 (NCH) Granular Broadleaf Weed Killer (Lebanon) Mec-Amine-D (Turfgo/United Horticultural Supply) Three-Way Lawn Weed Killer (Rockland) Three-Way Selective, Three-Way DG (LESCO) Trimec Bentgrass Formula, Trimec Classic, Trimec Southern (PBI/ Gordon) Triplet Selective, Triplet Water Soluble (Riverdale)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + MCPP + dichlorprop	Dissolve, Triamine, Triamine Granular, Triamine Jet-Spray, Tri-Ester (Riverdale) Jet-Spray 3-Way Weed Control (The Scotts Co.) Three-Way Ester (LESCO)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + MCPP + MSMA + dicamba	Trimec Plus (PBI/Gordon)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
2,4-D + triclopyr	Chaser (Turfgo/United Horticultural Supply) Turflon II, Turflon II Amine (LESCO)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
DCPA	Dacthal (ISK Biosciences) Garden, Turf & Ornamental Herbicide 5G, Turf & Ornamental Herbicide (Bonide) HS-110 (NCH) Super Dacthal 686 (Rockland)	Selective, post-emergence control of creeping speedwell and preemergence control of selected broadleaf species.
Dicamba	Vanquish (Sandoz) K-O-G, Weed Control (The Scotts Co.)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
Isoxaben	Gallery (DowElanco)	Selective, preemergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
Triclopyr	Turflon Ester (DowElanco, Monterey)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.
Triclopyr + clopyralid	Confront (DowElanco)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled.

HERBICIDES FOR POSTEMERGENCE GRASSY WEED CONTROL IN TURF AND NON-SELECTIVE APPLICATIONS

COMMON NAME	TRADE NAMES (PRODUCERS)	USES
Bentazon	Basagran T/O (BASF) Lescogran (LESCO)	Selective, post-emergence control of nutsedges and some broadleaf weeds
Chlorsulfuron	TFC (LESCO)	Selective, post-emergence control of tall fescue in Kentucky bluegrass, fine fescues and bentgrasses
DCPA	Dacthal (ISK Biosciences) Garden, Turf & Ornamental Herbicide 5G, Turf & Ornamental Herbicide (Bonide) HS-110 (NCH) Super Dacthal 686 (Rockland)	Selective, post-emergence control of creeping speedwell and preemergence control of selected broadleaf species
Diquat	Aquatate, HNS-210, Vegetrol, Watrol (NCH) Reward (Zeneca)	Non-selective, post emergence contact herbicide
Dithiopyr	Dimension (LESCO, Rohm and Haas)	Selective, post-emergence control of annual grasses and preemergence control of selected broadleaf species.
DSMA	DSMA 4 (Riverside/Terra International) DSMA Slurry (Drexel) Methar 30 (Cleary)	Selective, post-emergence control of annual grasses
Ethofumesate	Prograss (AgrEvo)	Selective, pre & post-emergence control of selected annual grasses and broadleaf species
Fenoxaprop	Acclaim (AgrEvo)	Selective, post-emergence control of annual grasses
Glufosinate-ammonium	Finale (AgrEvo)	Non-selective, post emergence herbicide
Glyphosate	Avail (LESCO) HNS-220, Hoedown, Quick Claim, Trail-blazer (NCH) Roundup DryPak Roundup Pro (Monsanto)	Non-selective, post emergence herbicide
Halosulfuron	Manage (Monsanto)	Selective, post-emergence control of sedges, such as yellow & purple nutsedge
MCPA	MCPA-4 Amine (Riverdale)	Selective, post-emergence control of annual grasses
MCPA + MCPP + dicamba	Eliminate (LESCO) Hat Trick (Turfgo/United Horticultural Supply) Tri-Power Dry, Tri-Power Selective Herbicide (Riverdale)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled
MCPA + MCPP + dichlorprop	Triamine II, Tri-Ester II (Riverdale)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled
Mecoprop (MCPP)	Certi-CM, Chemweed 265, HS-t67 Milpro 360 (NCH) MCPP (Cleary) MCPP-4 Amine (Riverdale) MCPP-4K (Tudgo/United Horticultural Supply) Mecomec (PBI/Gordon)	Selective, post-emergence control of broadleaf weeds. See label for tolerant turfgrasses and species controlled
MSMA	Crabgrass Killer (Bonide) Daconate 6, Daconate Super (ISK Biosciences) Drexar 530 (Drexel) MSMA (Bonide, LESCO) MSMA Turf (Turfgo United Horticultural Supply) 912 Herbicide, 120 Herbicide (Riverside/Terra International) Super Crabgrass Killer (Rockland) Weed Hoe (Monterey)	Selective, post-emergence control of annual grasses
2,4-D + MCPP + MSMA + dicamba	Trimec Plus (PBI/Gordon)	Selective, post-emergence control of annual grasses. See label for tolerant turfgrasses and species controlled
MSMA + cacodylic acid	Broadside, Moncide (Monterey)	Selective, post-emergence control of annual grasses.
Sethoxydim	Vantage (BASF)	Selective, post-emergence control of annual grasses in fine fescues.

Basic Items to Stock

Oils:

Engine — Universal fleet oil 15W-40. Uses from small four-cycle to heavy truck.

Automatic transmission fluid — Dextron III/Mercon Universal ATF.

Hydraulic — Hydra/Trans Universal in all AW32 through AW68 and tractor transmission oil.

Note: Most small equipment hydraulic systems call for engine oil 10W-30, 10W-40 or a synthetic.

Miscellaneous supplies: Nuts, bolts, washers, pin clips, clamps, electrical terminals, wire tape.

Parts: Relative to your brand of equipment, your dealer will be able to help you in the most commonly used parts to stock.

Note: Small equipment — backpack blowers, string trimmers, hedge trimmers, etc. are units that you can double-up on to allow rotation for repair and maintenance. Also, this will give you extra equipment for weather-related increased production.

UNDERSTAND CARRYING COSTS

The breakdown of a typical inventory carrying cost is below:

Cost of storage, rent, building depreciation, maintenance and repair	4%
Cost of inventory supplies, shelves, bins, record, and taxes	1%
Cost of insurance	2%
Employee costs, salaries	11%
Obsolescence, damaged or nonreturnable parts, pilferage, time spent returning parts for credit and warranty claims	5%
Money costs, lack of return on inventory and control investments that otherwise produce income (opportunity costs)	10%

The daily check list

☑ Clean the air filter.

☑ Inspect the engine shrouding for any problems that could interfere with the flow of cooling air.

☑ Check the air filter cover and air filter box for any broken or missing pieces that would allow unfiltered air to enter the engine and cause damage.

☑ Do a complete check over the unit and tighten any hardware that may have come loose the day before.

☑ Blow debris off the housing around the engine. Inspect for grass and debris between the gear housing and string head. Neglect here can create heat that may possibly cause loss of power and damage the gear box or cutter head.

☑ On trimmers, check the string guard for any broken or missing parts. Many users risk damaging the trimmer when they take off the string guards. Not only is this a safety concern for the user, but a unit without a shield can allow too much line out and may overload an engine not designed for such a heavy load.

☑ Lastly, inspect the throttle and operating controls for proper operation and visually inspect the shaft for damage or cracks.

EQUIPMENT MAINTENANCE SCHEDULE BASED ON MILEAGE OR TIME

Trucks

Based on manufacturer's recommendation:

3,500 to 5,000 miles/ 3 to 6 months

200 to 400 hours/ 1 year

- ☑ Lubrication
- ☑ Minor repairs
- ☑ Oil change
- ☑ Tire pressure

MAJOR SERVICE/WINTER

Based on manufacturer's recommendation:

15,000 to 30,000 miles/ 1 to 2 years

1,200 to 2,400 hours

- ☑ Belts
- ☑ Brakes
- ☑ Cooling system (Check radiator hoses)
- ☑ Exhaust
- ☑ Suspension
- ☑ Fuel filter
- ☑ Testing battery/ charging system
- ☑ Tires
- ☑ Tune up

Equipment

Based on manufacturer's recommendation:

25, 50, 100, 200 hours

1 to 3 months, 6 months to 1 year

- ☑ Lubrication
- ☑ Minor repairs
- ☑ Oil change
- ☑ Tire pressure

MAJOR SERVICE/SPRING

Based on manufacturer's recommendation:

250, 500, 750, 1,000 hours

3, 6, 9 months, 1 year

- ☑ Air-cooled engines
- ☑ Belts
- ☑ Cooling fins
- ☑ Decks: Belts, pulleys, stress cracks
- ☑ Drive systems
- ☑ Frame: Stress cracks, bearings, bushing
- ☑ Hydros: hoses, fluid leaks
- ☑ Water cooled engine: radiator/hoses