

More proof that the best costs less on tees and greens

It's as true this year as it was last.

Check the chart of comparative fungicide costs and you'll see for yourself why Daconil 2787 Flowable Fungicide is more economical to use than the other leading products.

Using a typical tee and green spray schedule, Daconil 2787 gives you greater savings on a per 1000 sq. ft. basis when it comes to delivering superior control of your most serious diseases — dollar spot (including benomyl-resistant dollar spot), Helminthosporium (leafspot and melting-out) and large brown patch.

In fact, Daconil 2787 has a proven record of providing the most effective control of 10 major turf diseases.

And here are more reasons why it pays to use Daconil 2787. There's no need to add a costly spreader/

sticker. Daconil 2787 already has it built in to assure you of full and even coverage for maximum disease protection.

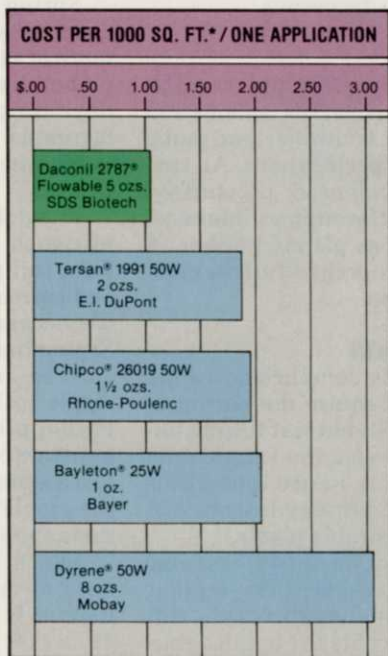
Daconil 2787 resists wash-off. Which means it keeps on working during heavy rains or watering.

What's more, in over 15 years of continuous use, there has never been a documented case of resistance with Daconil 2787. Even on courses where it was applied at weekly intervals over many years.

The facts are there. The proof is plain to see. Daconil 2787 gives you both effective and economical disease control.

So this season, make it Daconil 2787 on your tees and greens. Because the best costs less.

Daconil 2787 from SDS Biotech.



*Costs based on manufacturer suggested retail unit price as of January, 1984.

Daconil 2787® Flowable Fungicide



Always follow label directions carefully when using turf chemicals.



Agricultural Chemicals Business
SDS Biotech Corporation
7528 Auburn Road, P.O. Box 348
Painesville, Ohio 44077

Priorities are a must in May

Setting priorities in May is difficult since so many different things happen at once. Some landscape managers assign crews by a specific type of work, such as insect control, disease control, weed control, and planting. Other managers prefer to assign a portion of the landscape or golf course to crews and let them handle all types of work in the area.

Less skilled seasonal labor generally starts working in May and June. Training these workers becomes an additional consideration.

Certain types of work, especially mixing and applying chemicals, require special knowledge and are not suited for seasonal workers.

The jobs which take special knowledge are irrigation maintenance, selection and use of landscape chemicals, pruning, and equipment repair. Trusting this work to unskilled labor is dangerous.

Irrigation inspection

Irrigation systems should be inspected and tested by May. Considering the cost of irrigation systems and water today, every head, valve, controller, and pump station should be working to specifications. An irrigation system is a carefully balanced, pressurized network. If one part is not performing as intended, other parts will not function as planned either. A novice can't be expected to comprehend all the complexities of an irrigation system.

Chemical considerations

Chemical selection and use is complicated to the point Federal and state laws require the person in charge be trained and tested. It's not just the chemicals that are complicated, it's also the information needed to know when and how to use them. This includes a basic knowledge of primary insects, diseases, and desirable and undesirable plants.

During the end of April and May insects emerge and begin their damage. Warm days trigger chinchbugs, billbugs, webworms, mole crickets, cutworms and various grubs. Preventative applications of turf insecticides are effective at this time. Controlling adult insects before they lay eggs reduces damage later in the season.

Several of the most catastrophic tree and shrub insects attack young foliage in May. Deciduous plant pests include spring and fall cankerworm, elm leaf beetle, honey locust pod gall, eastern tent caterpillar, tussock caterpillar, oak leaf roller, and imported willow leaf beetle. Evergreen and conifer pests active in May include black vine weevil, juniper web worm, and European pine sawfly larvae. Depending on the area, applications of tree and shrub insecticides in early May catch a number of damaging insects at one time.

Early May is an excellent time to apply postemergence herbicides to weeds that escaped preemergence controls. Weeds in their two- to three-leaf stage are most susceptible to postemergence herbicides. Dr. Robert Shearman of the University of Nebraska recommends Trimec or 2,4-DP for postemergence control of hard-to-control weeds such as yellow wood sorrel. Second applications of preemergence herbicides may be needed at this time in northern U.S. and Canada.

Preemergence herbicides should be incorporated into plant beds as you convert from bulbs to annual displays. If beds became excessively weedy in the spring, you may want to spray weeds with Roundup and wait two weeks before replanting. Another option, where practical, is soil fumigation.

Spring rains and warmer temperatures favor development of certain turf diseases. Diseases are more of a concern on specialty turf areas such as golf or bowling greens. But, normal turf areas may develop problems when disease conditions are favorable. See our upcoming Disease Control Guide in the June issue for specific diseases and their control.

Fungicide treatment may be necessary, but factors such as thatch, irrigation, drainage, shade, air flow, soil pH, and fertilization should be examined and corrected to prevent continuing trouble. Schedule necessary renovation work for late August and September.

Tree and shrub diseases abound during May. Apple scab, fireblight, and frog eye begin defacing crabapples. Anthracnose attacks susceptible cultivars of sycamore in May. In both cases, planting disease resistant *Malus* or *Platanus* varieties solves the problem. If this is impractical, fungicide applications should be made in May.

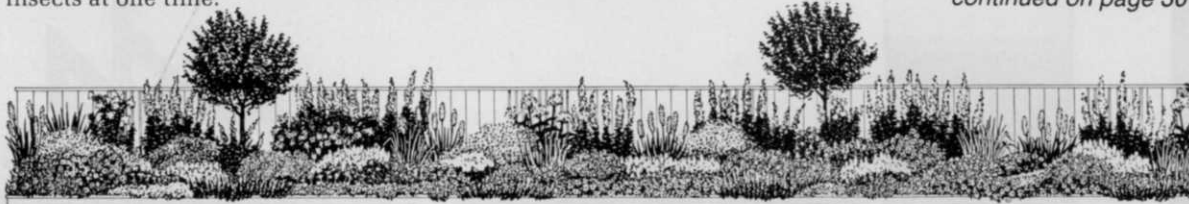
May is a good time to apply growth regulators to hard-to-mow slopes. A new use for growth regulators is annual bluegrass control in turf. 3M's Embark is now registered to discourage *Poa annua* in golf fairways by reducing seed production. Elanco's Cutless, a growth modifier currently under an experimental use permit, appears to have a number of beneficial qualities, including greener turf color.

Aquatic weed control becomes a factor as soon as water temperatures get above 65 degrees F. Lakes and ponds with bad algae reputations should be treated with copper compounds.

A second application of nitrogen to bentgrass, Kentucky bluegrass, zoysia, St. Augustine, and bermudagrass should be planned for mid- to late-May if your program uses quick-release fertilizers.

It is possible to mix compatible pesticides to

continued on page 30





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Street Trees

We need to constantly rethink and update street tree programs giving emphasis to trees that tolerate urban conditions.

by Douglas J. Chapman, horticulturist-administrator, Dow Gardens, Midland, MI



Tree of heaven is a short-lived tree tolerant to most urban stresses. However, its value makes its short life worthwhile.

Trees placed along urban streets are confronted with the harshest macro- and micro-climates possible. They must fit in restricted areas, live in disturbed soil, and be assaulted by salt spray, exhaust fumes, compaction, and even knife-carved graffiti.

As population density increased and man switched from horse-drawn to combustion-engine-vehicles, new problems arose to test the tree's ability to survive.

Trees that worked well when our commercial centers were first developed can no longer take the strain of today's cities. More than 70 percent of our urban centers were developed along rivers and lakes. Rail and highway networks moved cities into new areas.

The average life of trees growing under urban conditions today is 25 to 30 years, not the 100 to 200 years achieved by some trees in their native habitat.

Urban conditions are constantly changing. Likewise, the goals of street tree programs need to be continually adjusted.

By keeping six things in mind, many street tree problems are avoided.

- No species should comprise more than five percent of city trees.
- The backbone of a good street tree program should be based upon native trees.
- Trees selected should adapt well under extreme soil conditions, e.g. low oxygen or wet soils.
- Trees selected should thrive in

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A Kubota G tractor comes with a powerful 2- or 3-cylinder water-cooled diesel engine. The engines are built to the same exacting standards as our bigger tractors. And the advantages of a diesel engine vs. gas are many.

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conditions of restricted root zones.

■ The ultimate height and habit must fit restricted conditions, e.g. outlaws, utility wires, narrow streets.

■ There is no such thing as bad or weed trees.

History, or hindsight, is often helpful in pointing out short-term errors in judgement and provides a data base to assist us in future development.

Red maples from a Michigan nursery will not do as well as the same trees from local nurseries

The elm is one of many good cases showing monoculture leads to increased problems, insects and diseases in this case. A diverse tree population (no single tree species greater than ten percent of the population) will help reduce the need to control all but catastrophic insect and disease pests.

A good street tree program should be based on the use of native trees. Native trees are usually well adapted to the extreme conditions found in that area. Selecting a number of native tree species is wise for city tree planning.

City foresters and planners should encourage the nursery industry to select, propagate, and sell native plants for their region of the country. In many cases, cities have created their own nurseries to provide replacement trees. The trees in these nurseries should be evaluated for tolerance to modern city conditions and updated.

Trees from similar latitudes around the world should be evaluated for cities. Much of Asia and Eastern Europe is climatically similar to Northern and North-eastern U.S. in terms of temperature, moisture and photo period.

Provenance, or local adaption, is another consideration when

STREET TREES

Drought Tolerant Species

- Acer buergeranum* (Trident Maple)
- A. campestre* (Hedge Maple) (also wet)
- Ailanthus altissima* (Tree of Heaven) (also wet)
- Carya ovata* (Shagbark Hickory)
- Catalpa* spp. (catalpa)
- Cornus kousa* (Kousa Dogwood)
- Corylus colurna* (Turkish Filbert)
- Crataegus* spp. (hawthorn) (also wet)
- Elaeagnus angustifolia* (Russian Olive)
- Ginkgo biloba* (Ginkgo) (also wet)
- Gymnocladus dioicus* (Kentucky Coffeetree) (also wet)
- Koelreutaria paniculata* (Goldenraintree)
- Malus* spp. (crab apple) (also wet)
- Nyssa sylvatica* (Black Gum)
- Quercus alba* (White Oak)
- Q. macrocarpa* (Bur Oak)
- Robinia pseudoacacia* (Black Locust)
- Sophora japonica* (Japanese Pagodatree)

High Clay/Low Oxygen Soils

- Acer campestre* (Hedge Maple)
- A. griseum* (Paperbark Maple)
- A. negundo* (boxelder)
- A. platanoides* (Norway Maple)
- A. rubrum* (Red Maple)
- A. saccharinum* (Silver Maple)
- Aesculus hippocastanum* (Common Horsechestnut)
- Ailanthus altissima* (Tree of Heaven) (also dry)
- Alnus glutinosa* (European Alder)
- Betula lenta* (Sweet Birch)
- B. nigra* (River Birch)
- Carpinus caroliniana* (American Hornbeam)
- Celtis occidentalis* (Common Hackberry)
- Cercidiphyllum japonicum* (Katsuratree)
- Crataegus* spp. (hawthorn) (also dry)
- Fraxinus americana* (White Ash)
- F. pennsylvanica* (Green Ash)
- Ginkgo biloba* (Ginkgo)
- Gleditsia triacanthos inermis* (Thornless Common Honeylocust)
- Gymnocladus dioicus* (Kentucky Coffeetree) (also dry)
- Halesia carolina* (Carolina Silverbell)
- Juglans nigra* (Black Walnut)
- Liquidambar styraciflua* (American Sweetgum)
- Malus* spp. (crab apple) (also dry)
- Ostrya virginiana* (American Hophornbeam)
- Platanus acerifolia* (London Planetree)
- P. occidentalis* (American Planetree)
- Prunus serrulata* spp. (Oriental Cherry)
- Quercus bicolor* (Swamp White Oak)
- Q. coccinea* (Scarlet Oak)
- Q. imbricaria* (Shingle Oak)
- Q. palustris* (Pin Oak)
- Q. robur* (English Oak)
- Q. rubra* (Red Oak)
- Tilia americana* (Basswood)

planning urban tree programs. Provenance is the adaption of a tree to a particular area.

Red maple (*Acer rubrum*) is found from northern Florida to northern Michigan. But, red maples purchased from a nursery in northern Michigan and planted in northern Florida probably will not do as well as trees from local nurseries. Although the plant is genetically similar, it developed tolerance to conditions slowly as its range spread.

Provenance, carried to its ultimate, can help horticulturists throughout the world select plants for areas of specific rainfall, temperature, soil, and photo period.

Street tree selection means finding trees which tolerate extremes; e.g. disturbed and compacted soil, high water tables, droughty sites.

Some trees during their evolution have adapted to periodic flooding or low oxygen soils. Tolerance to brief periods of stress offers a fertile area for researchers to select cultivars which normally don't flourish under the same stress for longer periods. The ability to tolerate is more important in some instances than aesthetic characteristics.

Several trees are adapted to high water tables. They include Sweet Birch (*Betula lenta*), River Birch (*B. nigra*), Washington Hawthorne (*Crataegus phaenopyrum*), Kentucky Coffeetree (*Gymnocladus dioicus*), Carolina Silverbell (*Halesia carolina*), Swamp White Oak (*Quercus bicolor*), Shingle Oak (*Q. imbricaria*), Basswood (*Tilia*), Boxelder (*Acer negundo*), Red Maple (*Acer rubrum*), and Silver Maple (*A. saccharinum*). Adaption to droughty soils and ability to compete with turf are other major factors when selecting trees for streets. It is important to select plants with the ability to withstand the rigors of hot, dry summers and restricted root zones.

Washington Hawthorne is presently grown as a multiple-stemmed shrub but is equally effective as a small, single-stem tree. It flourishes in harsh conditions. It is relatively tolerant of salt; in fact, we have seen the bark



Put down the *Poa annua* seedhead uprising before it starts. Use Embark® PGR.

Tame *Poa annua* while it's young. Or it will grow to become a rebellious turfgrass, producing stiff seedheads that don't mow well, turning fairways oyster-white or a pale yellow, discoloring shoes, irritating allergies and generally making golfers uneasy. Not to mention course directors.

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For more information, contact Agricultural Products/3M, 223-1N, 3M Center, St. Paul, MN 55144. Or see your local 3M Embark PGR distributor.



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literally encrusted with salt and yet the plant survives.

Kentucky Coffeetree is a large tree, reaching 60 to 70 feet in height, with a grotesque growth habit that is, in fact, beautiful. It is extremely tolerant of urban conditions.

Swamp White Oak and Shingle Oak are natives that adapt to low oxygen soils. Their infrequent use is sometimes associated with difficulty in growing and transplanting.

Several plants thrive in droughty soil. They include Shagbark Hickory (*Carya ovata*), Hackberry (*Celtis*), Northern Catalpa (*Catalpa speciosa*), Kentucky Coffeetree, Hophornbeam (*Ostrya*), Bur Oak (*Quercus macrocarpa*), and Black Locust (*Robinia pseudoacacia*). Each of these have a unique niche to fill. The total size of the tree dictates the amount of outlawn required to sustain it. Trees should be classified as small (under 25 feet), medium (25 to 50 feet), and large (more than 50 feet). As urban

TREE HEIGHTS

30 to 50 feet

Sweet Birch
River Birch
Northern Catalpa
Washington Hawthorn
Carolina Silverbell
Hophornbeam
Shingle Oak
Boxelder
Black Locust
Hackberry

50 feet and above

Shagbark Hickory
Kentucky Coffeetree
Swamp White Oak
Basswood
Red Maple
Silver Maple
Bur Oak

areas become more densely populated, outlaws are narrower and street trees may need to be smaller than the towering elms of before.

Trees which survive so well they are often considered weeds should be reevaluated. For example, two maples have received bad reputations, red maple and silver maple. They are rapidly-growing native trees with few insect and disease problems. Regional cultivars of these maples could cause a resurgence in the use of these trees.

We must continually select, breed, and transplant trees with the objective of increased longevity, realizing that a great number of trees will not survive beyond 15 to 25 years. Tree of Heaven (*Ailanthus altissima*) and Boxelder (*Acer negundo*) are tolerant, but short-lived trees for urban areas. Tolerance to urban conditions should be of paramount importance while still trying to select trees with increased longevity.

WT&T



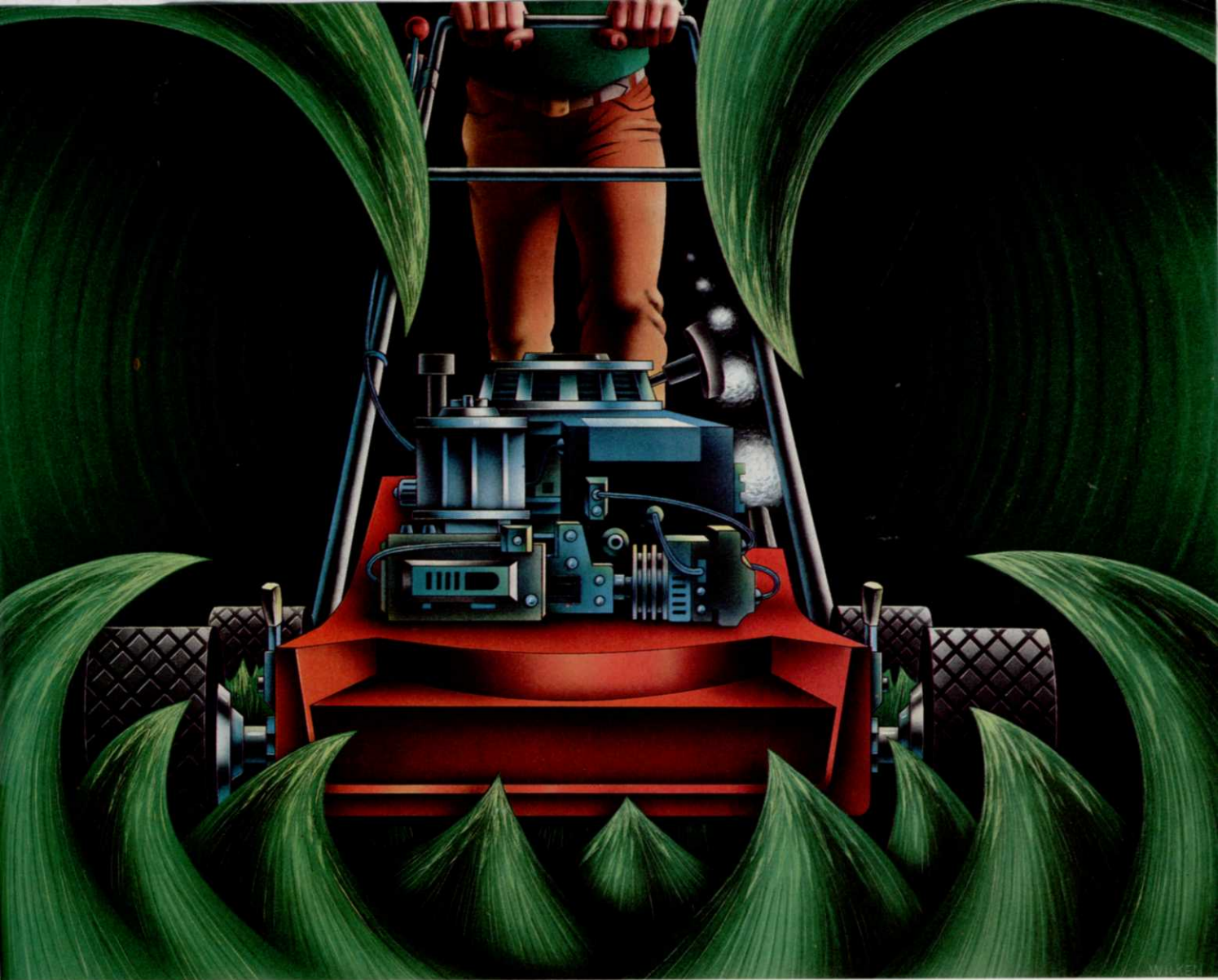
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roadsides and airports, or wherever else you want to save the time and cost of mowing.

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*Suggested retail price.

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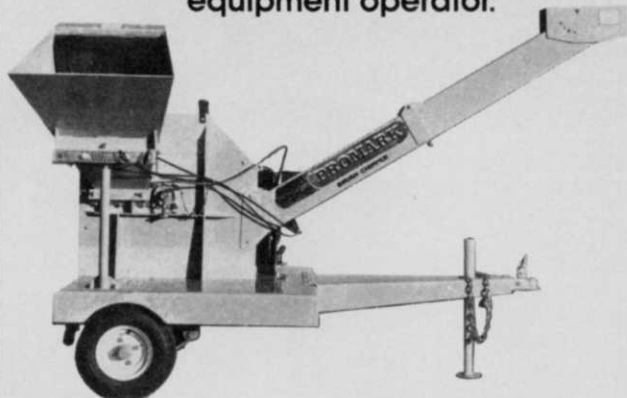
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MAY from page 22



Prune back shrubs after flowering by removing older stems instead of shearing for shape.

reduce the number of separate applications. For example, premixed combinations of ornamental insecticides and fungicides are available. Turf fertilizers and herbicides are often combined as well. Ask your chemical supplier for premixed products when available or about compatibility of the products you want to mix.

Prune after flowering

May is a good time to prune overgrown forsythia, quince and some spireas as soon after blooming as possible. Pruning these plants back later in the year or during the winter will reduce the number of flower buds. Correct pruning usually involves thinning out branches rather than shearing these plants back to shape. Rhododendrons and azaleas can be lightly pruned following flowering. Experts recommend removing seed-heads as they form after flowering.

Take notes to remind you later of changes needed in landscape design or major pruning. It's always a good idea to carry a small notebook with you to make such notes.

Set equipment priorities

To cut equipment down time, check spare part supplies and insist operators check belts, hydraulic lines, oil and filters at least twice each day. Establish priorities for jobs so equipment can be moved to high priority work in the case of breakdowns. Call your parts supplier before sending a crewmember to pick them up. It may be cheaper to pay a delivery service than take a man off a job to pick up supplies.

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