It's the guts of a tractor that make it run. And keep it running.
And no other grounds maintenance tractor has the guts of a Gravely.

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Beneath a Gravely's impressive exterior, lies an even more impressive interior. Designed to give each and every Gravely a long and lively life.

The Gravely swiftable 4-speed transmission is a good example. Through years of performance, it delivers the precise speeds and power you need to do a lot of jobs a lot easier. And a lot better.

You get steady power at its lowest ground speed to handle the muscle jobs like snow removal. You also get a choice of three other speeds for mowing, hauling and other tasks.

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Every possible part of a Gravely is built extra tough to stand up to year after year of hard, demanding work. The transmission housing and four-cycle engine are cast iron. The heavy duty tri-phase air cleaner eliminates excessive engine maintenance cost caused by poor air filtration.

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The exclusive Gravely all-gear, direct drive from engine to attachments improves power transmission. And because it is all-gear, it eliminates belts which are prone to break, slip or wearout.

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In addition to building tractors to last, Gravely wants its attachments to last, too. That's why most Gravely attachments are engineered to be completely compatible. This protects your investment by making sure that most Gravely attachments will be compatible with both old and new tractors.

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---

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FOR THE GRAVELY DEALER NEAREST YOU, OR FOR MORE INFORMATION, CALL TOLL-FREE 1-800-528-6050 EXT. 280 OR SIMPLY WRITE TO US AT: GRAVELY, 08 2 4 GRAVELY LANE, CLEMMONS, NORTH CAROLINA 27012.
Edward J. Duling of Lakeside, California, was installed 1979-79 president of the 900 member Southern California Turfgrass Council during a July meeting of the trade association in Commerce. Duling, who owns a commercial landscape maintenance firm operating in the San Diego area, succeeded Sydney H. Gordon. Gordon is associated with Robinson Fertilizer Company in Orange.

Other officers inducted included 1st Vice-President Stephen T. Cockerham, Rancho Verde Turf Farms, Perris; 2nd Vice-President John F. Culbertson, Pacific Turf Farms, Camarillo; Secretary William H. Keyser, Valhalla Memorial Park, North Hollywood; and Treasurer Dan Castleberry, Forest Lawn Memorial Park, Glendale.

The Council’s nine-member board was completed with the installation of Directors Dennis Frey, Toro Pacific Distributing, Gardena; Dave Mastroleo, Hillcrest Country Club, Los Angeles; and Don Schaich, Stover Seed Company, Los Angeles.

Vernon L. Shallcross, Jr., has been appointed executive vice president of Green-Lawn, Inc., a professional lawn care company headquartered in Louisville, Kentucky. He will be responsible for administration and will operate out of the company’s Tulsa, Oklahoma, office.

Shallcross said that the company plans to expand into several new markets in the coming year. “We see our largest potential to the south and west,” he noted. “By dividing duties between the Louisville and Tulsa offices, we will operate more efficiently and be able to respond faster to opportunities in both old and new markets.

Green-Lawn currently has over 50,000 customers in Louisville and Lexington, Kentucky; Evansville, Indiana; Nashville and memphis, Tennessee; and Tulsa and Oklahoma City, Oklahoma. Green-Lawn also franchised its first market this year in Jackson, Tennessee. The company has technical arrangements with Green-Lawn operations in several other states.
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Pictured left to right: Model 698, Model 608, Model 657, and Model 600. WEED EATER®, Inc., a subsidiary of Emerson Electric Co.

Circle 134 on free information card AUGUST 1978/WEEDS TREES & TURF
GROWTH IN TREE FERTILIZATION LINKED TO PROFESSIONAL METHOD

The value of property has risen significantly in the 1970s and with it the value of trees on property. It is curious why proper care of trees hasn’t escalated at the same rate as property values.

A tree in the 15 ft. category installed easily costs the homeowner or business $80. A small investment in annual fertilization is more than just a good idea, it is insurance.

The success of lawn care companies suggests that property owners are aware of the increased value of their landscape. Shouldn’t this same realization of worth effect the tree care business? Perhaps it has to a degree, but tree care business has not appeared on anyone’s list of greatest opportunity lately.

Residential and small industrial maintenance had been left to the small landscaper until lawn care companies, some of which were landscapers, cut right in with lawn maintenance.

The same complete care package could work well for trees. The package could be pruning, fertilization, and repair of winter damage in the spring; insecticide and fungicide treatments in late spring and summer; and mulching, fertilizing, and necessary winter preparation in the fall. The entire program could be one contract at a price per visit.

But like lawn care, tree care will need a universal technology to blossom. Although many lawn care companies are dry, the liquid spray technology made it boom. It became a unique occupation with the emergence of the tank truck.

The same type of technology is needed for tree care to boom.

The choices of fertilizing established trees have increased in number in the past five years. Most recently developed are the tree spike or capsule and the slow-release, ground-injected suspension. The system of injecting fertilizers, insecticides and other chemicals directly into the tree is also relatively new.

Perhaps the oldest method considered professional is the drilling of holes for insertion of dry fertilizer. And lurking behind all these methods, is the very practical, extremely simple method of surface application.

The success of lawn care spray rigs can be attributed to speed of application, rapid and dramatic improvement in the customer’s lawn, the outdoor advertising value of the tank truck, professional brochures, and the ability to plan routes accurately and efficiently.

The spray rig has been successful despite much higher equipment costs.

The companies who perform the same tasks with dry chemicals have adapted to the benefits of well-marked vehicles, reliable, one-man application methods, and efficiency. Another factor increasing efficiency is the routeman receives a healthy percentage of the business.

These same reasons for success can be utilized in tree care, when a dominant technology is chosen by professionals and recognized by the customer to be professional.

To determine the best, most professional method, each method must be examined for effectiveness, economy, and professional image. Comparative tests are needed which include all the methods.

Effectiveness

For established trees to achieve maximum health and growth, they should receive 5-6 lbs. of nitrogen per 1,000 sq. ft. of soil surface underneath. This area can be figured by multiplying the distance in feet from the trunk to the drip line (the radius) by itself, and then multiplying by 3.14 (known as pi).

For example, a tree that has branches extending out from the trunk 8 ft. would have surface area underneath totalling 200 sq. ft. (8 x 8 x 3.14 = 200). Consequently, the tree requires one lb. of nitrogen.

If the fertilizer being used is 10-5-5, then ten percent of the fertilizer is nitrogen, and ten lbs. of fertilizer need to be spread uniformly under the tree to give the tree one lb. of nitrogen.

All these figures can be computed ahead of time and made into a table (see table 1).

Not all methods of tree fertilization provide five lbs. of nitrogen when used as directed on the label, notably tree spikes and capsules. However, manufacturers of these products claim improved leaf growth and appearance of trees fertilized with their products. The question is, does the method provide improved growth and appearance to the level desired by a customer?*

Tests have shown when nitrogen is applied at fractions of the recommended amount, it does not produce results proportionate to the fraction.

Also, it is recommended that a third to a quarter of the nitrogen be in slow-release form.

The amount of phosphorus and potassium does not appear to be critical in tree fertilization unless a deficiency exists. Generally, these elements should be a third of the nitrogen amount of the fertilizer (i.e. 12-4-4). It has been shown that phosphorus and potassium do not migrate to the roots as well as nitrogen, which limits their effectiveness when applied to the surface.
Economy

Two critical factors in the economy of a method are labor and equipment.

The only equipment needed to place tree spikes is a hammer. Surface application requires only a spreader.

Tree injection requires a drill (or hammer). Vertical hole drilling requires a large drill or rod (in soft soil).

Liquid injection requires the most equipment, including a pump, tank, agitator, and injection nozzle.

From a time standpoint, drilling methods take the most time. Tree spikes probably take the least, followed by surface application, and soil injection.

The two least costly methods appear to be spikes and surface application. However, spikes do not provide the recommended five lbs. of nitrogen, and are actually more expensive on a cost per lb. of nitrogen basis. Surface application carries the threat of burning out turf in the area around the tree.

Soil injection, whether with solutions or suspensions, is the next choice from a time standpoint. However, equipment costs are high.

So, we are back to drilling, thus the dominance in the recent past of the vertical hole method. Equipment costs are higher than spikes or surface, but only a fraction of a spray unit.

The concept of drilling into the tree has not really achieved customer acceptance. People have

Table 1: Surface Area and Nitrogen Requirement According to Tree Size.

<table>
<thead>
<tr>
<th>Radius*</th>
<th>Surface Area**</th>
<th>Nitrogen Needed</th>
<th>Lbs. N in Fertilizer</th>
<th>Lbs. Fertilizer Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>28 sq. ft.</td>
<td>½</td>
<td>10</td>
<td>1½</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>1½</td>
</tr>
<tr>
<td>5</td>
<td>78</td>
<td>½</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
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<td></td>
<td></td>
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<td>15</td>
<td>3½</td>
</tr>
<tr>
<td>8</td>
<td>200</td>
<td>1½</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>314</td>
<td>1½</td>
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<td>19</td>
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<td>12</td>
<td>15½</td>
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<td>49½</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>39½</td>
</tr>
</tbody>
</table>

* distance from trunk to drip line.
** r x 3.14 (π)
Tree Fertilization

too long associated entering the tree above ground with serious problems. That's not to say they won't accept it, but it has this hurdle to overcome.

Professional Image

Call them gimmicks if you like, but the physician's white coat and the lawn care businessman's tank truck have been accepted by the general public as a sign of professionalism. Certainly the liquid method of lawn care is not the cheapest from an equipment standpoint. But its image has more than made up the difference in cost.

The tree care industry needs its sign of professionalism for tree fertilization. It also needs to provide the service at an acceptable price.

Actually, arborists are already experts at spraying and most are certified. Compartmentalized tanks are currently in use by arborists. Many trucks have more than one spray gun. The arborist's truck also has customer identification.

Consequently, it is feasible to offer fertilization injection as an adjunct to other spraying services. Many do.

People who currently pay for professional lawn care pay in the range of $20-$30 per application, four times a year. Each application takes the route-man about ten minutes, and he can do 30 to 50 accounts per day. He is the only person with the truck.

But, for a route devoted just to tree fertilization, the standard arborist vehicle and crew would be impractical. It is doubtful whether a homeowner will pay more for tree care than lawn care (fertilization only). A second type of vehicle specifically for one of the methods of tree fertilization is needed.

Professional image is difficult to earn when the person is doing essentially the same thing that a customer can do himself. This includes spikes, surface application, to an extent vertical hole punching and foliar spray. Foliar spraying has not done well in tests either.

The most unique method having the characteristics necessary for customer identification is the soil injection method. If this method could be developed into a route similar to lawn care, there may be great potential.

The vehicle must be unique and attractively marked, operated by one person, and efficiently routed. Promotion must be high quality. Route managers must be rewarded well for their efforts.

This type of large scale marketing may be too much for some firms, but lawn care has shown it can be done. Volume is the only way to keep prices down at an acceptable level.

There is a need for professional tree fertilization, but it hasn't yet been put into a form that customers will readily accept and then demand. Bruce Shank
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121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140
141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160
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CITY
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The "New Concept" People
SOD PRODUCERS PLANT FEWER ACRES IN 1978

Approximately 1,200 companies grow $225 million worth of sod each year according to a survey of 144 sod producers by Weeds Trees & Turf.

In the process, sod producers spend $6.6 million for seed, $15 million for fertilizer, and $3.9 million on chemicals each year.

More than 700 U.S. sod producers were mailed questionnaires for this survey. Twenty percent returned them.

The universe of 1,200 sod companies was derived from input by the American Sod Producers Association and suppliers. Those considered actual sod farmers either have sod production as a primary source of revenue or farm a significant amount of sod acreage. Significant in this case would be more than 20 acres. Many nurseries grow a few acres of sod as a sideline to wholesale or retail business. For this survey, such nurseries were not included.

A value of $1,500 per acre of sod produced was used to calculate gross revenue. This figure is a moderate estimate based upon data from Maryland (see article page 33). Value per acre has been reported as high as $2,200 and as low as $1,300.

The average sod farm is 290 acres from which 112 acres was sold in 1977 at a value of $168,000. Using median figures, the typical sod farm is 150 acres from which 70 acres was harvested in 1977 at a value of $105,000. A few sod farms in the 800 to 1,500 acre range inflated the average. The average staff is six full-time and seven part-time employees.

According to these figures, sod growers harvest between a third and a half of their acreage annually. They expect to sell between 10 and 15 percent more acreage in 1978 than in 1977. However, respondents planted 15 percent less acreage in 1978. Perhaps this is in response to a predicted downturn in building starts.

Landscape contractors are the largest purchasers of sod, followed by homeowners and builders. Nearly two-thirds of sod growers sell to retail nurseries and 56 percent sell to wholesale nurseries. Athletic fields (58 percent) and golf courses (51 percent) are major buyers of sod.

Sod growers indicated that Tifway is the most common bermudagrass for sod, Penncross is the most common bentgrass, Pennlawn is the most common fescue, Manhattan is the most common ryegrass, Floratam is the most common St. Augustine grass, and Meyer Z-52 is the most common Zoysia.

Bluegrass, of course, is the dominant type of sod produced. Baron ranked number one with 47 percent of the growers. Merion still places strongly in second (27 percent), Fylk

Annual expenditures projected for 1,200 sod producers.

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>Range</th>
<th>Median</th>
<th>Mean</th>
<th>Projection</th>
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</thead>
<tbody>
<tr>
<td>Fertilizer</td>
<td>87</td>
<td>$75-$140,000</td>
<td>$7,000</td>
<td>$14,465</td>
<td>$15,000,000</td>
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<tr>
<td>Fungicide</td>
<td>25</td>
<td>$100-$27,000</td>
<td>$500</td>
<td>$1,218</td>
<td>$ 660,000</td>
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<tr>
<td>Herbicide</td>
<td>74</td>
<td>$20-$35,000</td>
<td>$2,000</td>
<td>$3,604</td>
<td>$3,200,000</td>
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<tr>
<td>Seed</td>
<td>58</td>
<td>$250-$85,000</td>
<td>$6,000</td>
<td>$9,505</td>
<td>$ 6,600,000</td>
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</table>

Equipment owned by 1,200 sod growers.

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>Mean</th>
<th>Projection</th>
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</thead>
<tbody>
<tr>
<td>Aerator</td>
<td>27</td>
<td>1.4</td>
<td>450</td>
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<tr>
<td>Chemical Applicator</td>
<td>69</td>
<td>1.5</td>
<td>1200</td>
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<tr>
<td>Dump Trucks</td>
<td>36</td>
<td>1.7</td>
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<tr>
<td>Lift Trucks</td>
<td>58</td>
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<tr>
<td>Flat Bed Trucks</td>
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<td>1900</td>
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<tr>
<td>Pickup Trucks</td>
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<td>2800</td>
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<tr>
<td>Trailer Trucks</td>
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<td>1400</td>
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<tr>
<td>Flail Mowers</td>
<td>49</td>
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<td>Rotary Mowers</td>
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<tr>
<td>Fertilizer Applicators</td>
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<tr>
<td>Small Utility Vehicles</td>
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<td>Sod Cutters</td>
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<tr>
<td>Self Contained Sod Harvesters</td>
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<td>Tractor Drawn Sod Harvesters</td>
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<td>1-25 h.p. Tractors</td>
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<td>26-50 h.p. Tractors</td>
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<td>3300</td>
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<td>2.4</td>
<td>1600</td>
</tr>
<tr>
<td>100+ h.p. Tractors</td>
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<td>1.9</td>
<td>500</td>
</tr>
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Projected totals of acreage of sod farms.

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<tr>
<th>Projected to 1,200 farms</th>
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</thead>
<tbody>
<tr>
<td>Total Acreage</td>
</tr>
<tr>
<td>Acres Planted in 1978</td>
</tr>
<tr>
<td>Acres Harvested in 1978</td>
</tr>
<tr>
<td>Acres Sold in 1977</td>
</tr>
</tbody>
</table>
Survey

izier ($50), followed by seed ($33) and then herbicides ($12). An average of $7.50 per acre is spent for fungicides.

The 1,200 sod producers own 3,350 harvesters and cutters, 6,070 tractors, 7,720 mowers, 2,300 lift vehicles, 2,800 pickup trucks, 1,900 flatbed trucks, 1,500 fertilizer spreaders, 1,200 spray rigs, 1,400 trailer trucks, and 450 aerators. A conservative value of equipment inventory of the average sod producer is $250,000. WTT

Types of seed used for sod and number of respondents indicating use.

BERMUDA 19%
- Tifway 419 or 328
- Santa Ana
- PD 102
- Tiff Green
- Midiron
- Coastal
- Common

BENT 3%
- S71
- Penncross
- Seaside
- Toronto C-15

BLUEGRASSES 67%
- Baron
- Merion
- Glade
- Fylking
- Adelphi
- Victoria
- Park
- Windsor
- Newport
- Touchdown
- Majestic
- Peninsarl
- Others
- Blends

FESCUE 15%
- Pennlawn
- Jamestown
- K 31
- Creeping Red

RYEGRASS 6%
- Manhattan
- Citation
- Pennfine

ST. AUGUSTINE 10%
- Floratam
- Bitter Blue
- Living Carpet
- Blue-Green
- Common Texas

ZOYSIA 12%
- Emerald
- Meyer Z-52
- Metrella

ARGENTINE BAHIA 2%

CENTIPEDE 12%