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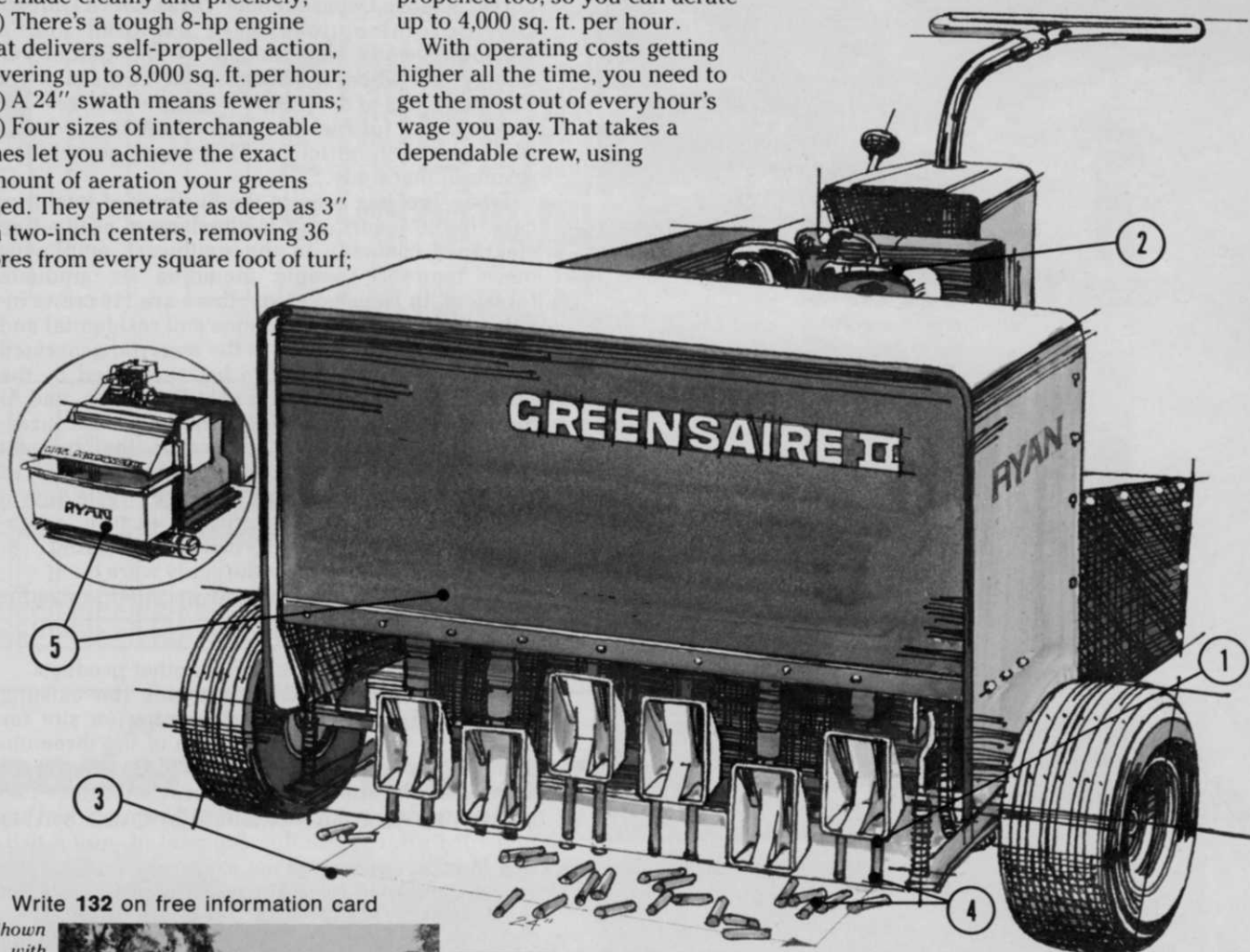
(5) An optional Core Processor attaches here. It separates thatch from soil, top dresses your greens and catches the waste in one operation.

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TEXAS FORESTERS STUDY SAVINGS OF UTILITY CLEARANCE RESIDUES

By W.K. Murphey, J.G. Massey, and A. Sumrall, Professor, Assistant Professor, and Forester, Texas A&M University



Large stumps and branches as well as chips made in the field are rechipped to achieve the right size particle for energy use.

The rising cost of energy has prompted a Houston-based utility line clearance corporation to join with Forest Department staff at Texas A & M University to evaluate disposal methods for tons of wood chips it produces daily.

Trees, Inc. had been disposing of the residues from its power line clearance and maintenance in a landfill that it owned and operated. As this landfill became filled the company searched for alternatives to dumping the approximately 113 tons of residues to be disposed of daily. To this end, conversations were held with researchers from the Forest Science Department of Texas A & M University. Several options were explored and a feasibility study was funded by the Center for Energy and Mineral Resources at Texas A & M. The study was to determine if chipping the residue and selling it for fuel was both economically feasible and energy efficient. This paper reports the results of that study.

Trees, Inc. has been in the business of total tree care for 27 years and is the largest utility line clearance company in the southwest, employing more than 650 people including six graduate foresters. In Houston alone, there are 110 crews involved in utility line clearance and residential and commercial tree work. It is the material generated by these crews that was to be considered by the project. C. L. Benge, president of Trees, Inc., and Al Sumrall, forester, were instrumental in encouraging and developing the innovation that brought about this study and the successful completion of turning thousands of tons of wood waste into a marketable product. The product, in turn, potentially saved gallons of oil formerly used as fuel.

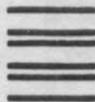
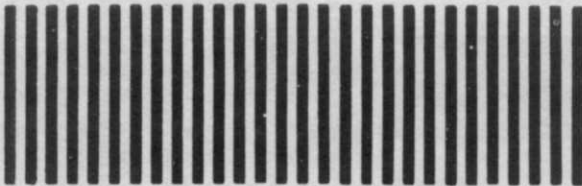
The options explored in the study were to:

- 1.) Chip all of the residue to an acceptable size for use as a fuel chip.
- 2.) Continue to landfill.
- 3.) Explore use of this residue for other products.

The data was collected assuming the existing landfill site would be the concentration site for material to be processed for each of the three options. These data, shown in Table 1, represent averages obtained over several months. The mileage rates to the new landfill represented initial runs prior to the development of option two. The landfill option was not exercised, nor was the search continued for other possible products from the residue.

The costs of material in dollars includes the money expended in wages, fuel and equipment pro-rated to one day. Approximately 113 tons of green wood are delivered to the concentration site each day by crews working throughout the city. There is energy expended to cut, chip and deliver that wood residue plus the energy represented by the wood itself. This energy is assumed to be 4,000 Btu's per pound of green wood. The money obtained by the contract operation was not considered since regardless of option these funds

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Residues from page 32

would be the same. The calculation of the funds expended to remove the material to the concentration site was considered only to provide a base cost per unit of energy. The dollars include the labor, fuel, and equipment costs while the energy is that expended in cutting, running mobile chipper and transporting residue to the chipping-concentration site.

The additional dollars and energy expended in the landfill includes that associated with a 20 mile haul in 20 ton trucks, plus the fee for dumping. The total lost energy amounts to 925 million Btu's if we include the energy expended each day, plus that energy potential being buried. This energy is recovered minus that expended when the residue is rechipped for the fuel chip. The rechipping is necessary because logs and some other vegetation are not chipped at the mobile site. The cost of the chipper is recovered as shown by the total dollars expended in the landfill operation, \$12,475, versus the fuel chip operation, \$12,448.

Of interest is the value of this energy recovered. A barrel of residual fuel oil contains 6.286 million Btu's for a 42 gallon barrel. The fuel chip operation then produced the equivalent of 138 barrels of oil a day. The firing efficiencies of oil versus wood depends on the moisture content of the wood, but may average about a ratio of 1.25 in favor of oil. Hence, when firing efficiencies are accounted for we have an equivalent of 110 barrels of oil per day. As the cost of oil increases, the landfilling of wood residues becomes less and less attractive from a national energy perspective in addition to the costs of the landfilling operation.

The Trees, Inc., operation will be monitored further and as additional information becomes available we shall update this report. **WTT**

Table 1. Costs in Dollars & Energy per Day for Two Options of Residue Disposal

Material Costs — Concentration Site			
Dollars		\$12,064.00	
Energy (mm Btu)		15,386 ^a	
Material Costs — Landfill Operation			
Dollars	\$ 411.21		Total \$12,475.21
Expended Energy (mm Btu)	6,208 ^b		21,594
Buried Energy (mm Btu)			904.0 ^c
Material Costs — Fuel Chip Operation			
Dollars	284.00 ^d		
Expended Energy (mm Btu)			35,893
Recovered Energy			868,107 ^e

(a) Includes transportation 69,450 Btu/ton, Mobile Chippers 51,250 Btu/ton and chain saws 15,800 Btu/ton.

(b) Energy expended: Transportation 4,618 mm Btu/day and handling 1,590 mm Btu/day.

(c) 4000 Btu/lb x 2000 lb/ton x 113 ton/day = Btu's/day.

(d) Includes: Costs of handling, chipper operation and depreciation minus price for chips sold @ \$1.25 per ton FOB site.

(e) Recovered Energy = Total energy from chips minus the energy expended from residue generation, transportation, handling and chipping.

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NORTHERN THEME PARK PLANTINGS REQUIRE COMPLETE IRRIGATION SYSTEM

Marriott's \$50 million Great America family entertainment center near Chicago, Illinois is one of the world's most dazzling theme parks. Its five theme locales are jam-packed with daring thrill rides, live shows and colorful eating spots.

Today the park features lush green parkways, beautiful flower beds filled with exotic plantings and handsome wooded slopes. But the landscape wasn't always as colorful and thriving. In 1976, just two months after the park had been officially opened, the management of the vast entertainment center had to come to grips with a landscaping problem that was detracting from the beauty of the park and that was costing a considerable amount of money. There was no effective permanent irrigation system.

Complete irrigation systems are not considered necessary in the Midwest because of the usually abundant rainfall and are not usually a part of the total plan for an amusement park or other complex. Secondly, the Great America center is open only through the summertime, causing an expensive irrigation system to sit dormant through the cold months when the park is closed and the ground frozen.

Unfortunately, that rationale didn't take into consideration the intense heat of Illinois summers or the fact that park gardeners had selected flowers and other exotic plantings that required special watering care. The results: many of the plants died. These losses occurred despite the fact that maintenance people were watering the grounds as regularly as possible with a quick coupler valve system put in primarily to wash down streets and sidewalks.

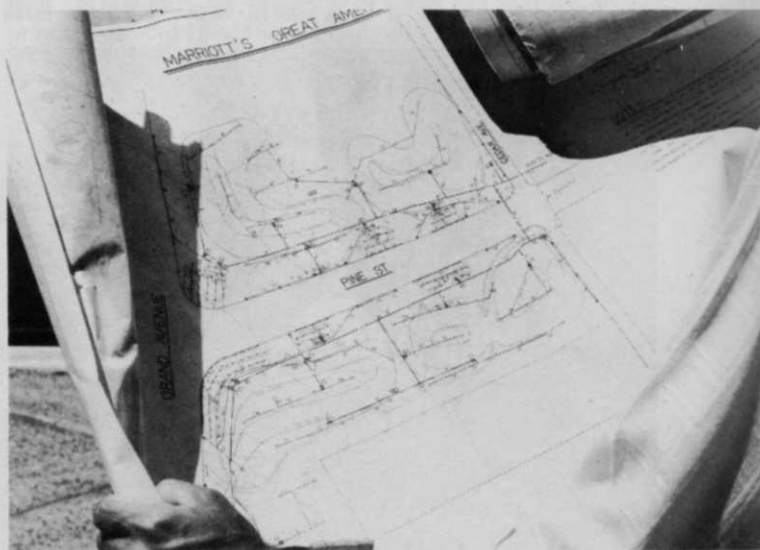
Faced with these losses, the park management sought irrigation help. In August of that first season, Century Rain Aid of Southfield, Mich. was asked to plan an irrigation system to water the front entrance of the park, one of the areas most affected by lack of proper watering. While undertaking that project, the firm met with park officials and were eventually asked to design the overall irrigation system that is under construction today.

"Our first problem was to provide the proper irrigation for the park's front entrance," said Ken Hodas, design manager for Century. "The grass was dying and detracting from the beauty of the park."

Hodas developed plans for the entrance watering system that included bringing in a line from the pump house. The project went smoothly and was completed very satisfactorily.

Once the front entrance was completed, Century Rain Aid was given the go-ahead to design a system which would allow for the many variables the 80-acre park's watering needs presented. That assignment called for the solution of several basic irrigation problems.

"Our first step was to develop an overview of the project," said Hodas. "We had to ask ourselves several basic questions and build on the answers



Plans for flower bed irrigation with approximately 50 head locations and proper spray overlap.

we got back. What kinds of plants are we watering? What moisture requirements must we meet? What present equipment and facilities do we have to work with? How long do we have to do the watering? What other variables are there?"

Great America displays some of the most exotic and unusual outdoor plants imaginable. Landscapers may decide, for example, to plant 5,000 tropical ferns in one given area, then pull them up the next year and transplant them in another area of the park. For that reason, Hodas had to take into account the fact that watering requirements would change from season to season as the plants were varied.

"To compensate for the flat Illinois landscape, a number of banked flower beds and berms had been put in," said Hodas. "These were steeply graded and bristled with pine trees. The park's professional caliber greenhouses kept the exotic plantings in ample supply, but the cost was tremendous money that could be saved with proper irrigation outdoors."

Therefore, irrigation recommendations were required in terms of planting areas rather than for specific greenery.

"There was a lot more to the project than just irrigating 80 acres of land," said Hodas. Their existing main line and pumping policy had to be altered to take into consideration the planting changes occurring almost yearly."

To get a handle on the exacting water requirements needed to irrigate the varying plants, Hodas relied on aerial photography and about 250 Polaroid snapshots. Additionally, the park supplied the Century Rain Aid team with a set of plans for the amusement park. Hodas assembled this

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Aerial photographs like this were used to pinpoint the location of sprinklers.

Irrigation from page 36

blueprint jigsaw thirty-six 24- by 36-inch sheets. Additionally, Hodas and his assistants walked through the park at least three times in order to spot locate the many sprinklers and valves that would be required.

To determine just how much water was available to do the job, the irrigation specialists called on the park's maintenance people.

"We started our planning with a figure of 1,500 gallons of water per minute," said Hodas. "But maintenance teams were also cutting into that figure at a rate of about 200 gallons per minute to wash down walkways and perform other watering duties."

Subtracting that figure allowed 1,300 gallons per minute to do the job. Additionally, park restrictions prohibited irrigating during visiting hours. With park hours from 10:00 a.m. through 10:00 p.m. throughout the summer season, plus other timing considerations, eight hours per day were left to irrigate the park.

Because of the high level of traffic through the park, including thousands of children, the sprinklers were located away from the walkways where they might be kicked or damaged.

Rain Bird equipment was used on the job, including Model RC-1260 Controllers, specially adapted for moisture sensing and lighted for nighttime observation and electric valves.

"As a part of our plan, we gave the Marriott people some figures for proper maintenance," said Hodas. Towards this end, we tried to limit our use of different models of sprinklers to a select few. In that way, we could keep our equipment standardized with backup quantities should replacements be needed."

The plan was delivered to the Marriott corporate offices in Washington, D.C. in the summer of 1977, six weeks after Century Rain Aid was asked to plan the project.

"We realized we were talking about a big expenditure even for a company of Marriott's caliber," said Hodas. "Savings in maintenance costs alone would not be cut drastically upfront. But, we emphasized that the savings in plantings would be considerable." Marriott okayed the plan and work was ready to begin.

The first phase of development involved approximately 65 acres. Contractors used more than 40 controllers as well as more than 300 electric valves and miles of pipes and wires.

What can irrigation designers learn from this project?

"Like a mathematician, you have to consider the problem step by step," said Hodas. "Be aware of all the variables you're going to face — the climate, the landscape, the variety of plants, available water sources, and so on. With those answers in hand, your previous experience can come into play. Certain sprinklers will work better than others depending upon the situation you're presented with. And costs are another important factor; you'll want to budget your efforts to stay within a realistic framework given the size of the project."

How does Hodas feel about the Marriott project?

"I'm very pleased with the plans we eventually drew up," he said. "If we had it to do over again, though, we'd prefer to be involved from scratch. We would have preferred to design the system as part of the overall project, before the park was open to the public."

What about the reaction of the visitors? Unfortunately, irrigation systems go largely unnoticed when working properly. Mothers may notice how beautiful the flowers look. Fathers will probably appreciate the shade trees. The kids? Well, they're there just for the fun. But few visitors will stop to think of the energy expended to make it all happen.

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OUTLINE TO EFFECTIVENESS AS A GREEN INDUSTRY SUPERVISOR

By James F. Gauss, Horticultural Consultant, Evanston, IL

In the past eight years, I have had the opportunity to supervise four different groupings of people. These groupings ranged from five to fifty people; professional and non-professional; volunteer and paid staff; trained and untrained. I am also the "supervisor" of a family of seven. During this time I have learned and continue to learn much about my role as a supervisor and leader. What I have learned I will share with you in a simple outline format.

In planning

1. Have a calendar marked with known work projects for the season or year. Both you and your staff should keep such a calendar.
2. Write out a general work plan for each week for yourself and your staff.
3. Have a written daily work plan with specific projects and personnel responsible along with a designated supervisor.
4. Whenever possible, give specific written instructions for each new task and equipment and/or tool needs, to the worker in charge.
5. Schedule vehicle and equipment needs in advance with those responsible for such.
6. Make your expectations of completion time for each task well known.
7. Be able to discern each worker's abilities and achievements and give them tasks matching their abilities where they are likely to succeed. Work from employee's strengths, not weaknesses.
8. Define your goals and objectives early. Start with realistically achievable objectives with matching personnel.
9. Consult others periodically in planning work schedules, assessment of procedures, personnel, and accomplishments.

In Task Mastering

1. Give clear, precise instructions. Who? What? Where? How? When? Who is to do the job? Who is in charge? What, specifically, do you want done? Where is the job located? Where do you want things or personnel to go? How, specifically, is the task to be done? When do you want the job started and finished?
2. Be understanding of the need for work slowdowns. For example, during a particularly hot day or after a hard task, you might expect lower productivity. This can be turned into a reward system by mentally lowering your standards of productivity temporarily, by telling employees that they can take it easy on this task since they worked exceptionally hard on the last one, or by designating easier tasks or lengthening the required time for completion of the task. This can be viewed as an exchange for work speed-ups and high levels of productivity during peak needs. This is a better alternative to undirected slow-downs initiated by the workers which would put them in

control of the situation, foster insubordination and poor work habits.

3. Continually assess your own role, goals, effectiveness, and progress.
4. Be willing to back up and change an approach to a task when something is not working out.
5. Never belittle, embarrass, or holler at an employee, and especially not in front of other workers. Rather, take the employee aside and specifically point out your expectations of him in that situation where he is falling short and how he can meet your expectations. If a worker tries hard to meet your expectations but falls short because of skill deficiencies, then try to channel his efforts into learning the task or an area of work more appropriately matching his present abilities. If a worker is unwilling to meet your expectations when they are just, then the consequences of his unwillingness should be clearly made known to him.
6. Accept different ways and approaches to getting a job done. For the most part, be understanding and tolerant of an atypical work performance which does not influence the work of others, inhibit a task from completion, or violate safety rules, and does not reflect unfavorably upon the organization. Praise behavior and performance you want to continue.
7. Motivate workers through positive feedback and tangible rewards (a thank-you note, buying coffee, public recognition of appreciation or achievement, etc.).

In Delegating Authority

1. Make your delegation of subordinate authority clearly known to that person and those he will be supervising and the area of his responsibility. Keep your subordinate leadership well defined and consistent wherever and whenever possible.

In Problem Prevention and Solving

1. Make your expectations for each employee clearly known to that employee.
2. Nip all complaints in the bud—be willing to admit mistakes you've made and apologize for things you did which cause fellow workers consternation or adversely affect worker morale. Promote reconciliation in worker disputes.
3. Let no complaint go unanswered. However, avoid debates over the rightness of your decision if you have appropriately weighed all approaches and consequences. Whenever appropriate, satisfy a worker's genuine desire to know the importance of his task and why he's doing it this way.
4. Deal with employee problems promptly and decisively. Bring in additional people when necessary and appropriate, especially supportive people, such as your supervisor, and the other persons in question.

Continues on page D



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PROTECTS SEEDLINGS

Cellin fiber mulch provides a thermal barrier that minimizes variances in ground temperatures. This helps assure germination.

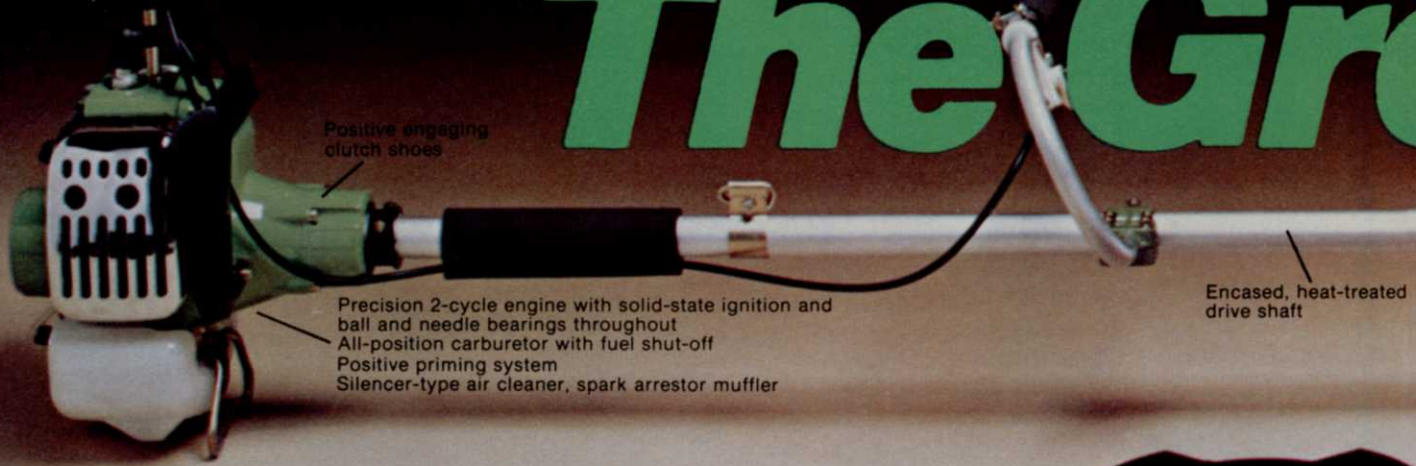
GREEN, BIO-DEGRADABLE

The water-soluble dye in Cellin mulch gives the hydroseeder a visible gauge for metering the ground being sprayed. The color gives an attractive, temporary green appearance to the ground. The mulch fibers gradually decompose as the grass firmly takes root.

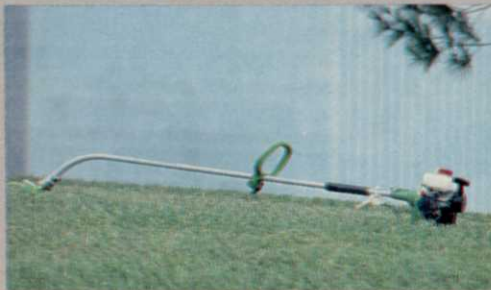


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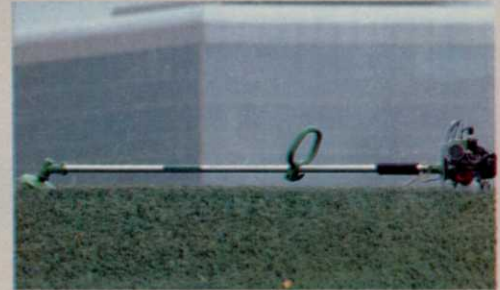
Six great gas-power-tough trimmers:



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SPECIFICATIONS:

Engine Type: Inverted 2 Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 14.9 cc **Bore & Stroke mm:** 27 x 26 **Compression Ratio:** 6.2:1 **Max H.P. (H.P./RPM):** 65/6500 **Carburetor:** Butterfly Type All Position **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled **Lubrication (Fuel Mixture):** 20 to 1 **Fuel Capacity:** (.4L) 42Qt. **Shaft:** Flex Type **Reduction:** None **Cutting Head (Std):** 5" Dia. **Cutting Swath:** 17 in **Weight (with cutting head):** 10 lbs (4.5kg)

This model is equipped with the popular 22.5 cc Green Machine engine. There's power to spare for the toughest string trimming operations. Standard equipment includes the reliable, manual-feed head. You can also use it with the optional TFC™ Tap-For-Cord head. A light tap on the ground automatically releases fresh cutting string. The Model 2000 can also be used with the new fixed-line head (.105 line). Other features include an all-position diaphragm-type carburetor with positive fuel shut-off. Power is transmitted through a rugged, enclosed flexible drive-shaft. As with the 1900, the mid-handle is easily adjustable to the operators height and can be quickly reversed when the unit is used for edging. It's a beautifully built unit, ideal for those that want additional power and efficiency.

SPECIFICATIONS:

Engine Type: Upright 2-Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 22.5 **Bore & Stroke mm:** 32 x 28 **Compression Ratio:** 6.5:1 **Max H.P. (H.P./RPM):** 1.2/6500 **Carburetor:** Slide Type All Position **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled **Lubrication (Fuel Mixture):** 20 to 1 **Fuel Capacity:** (.6L) 64Qt. **Muffler:** Spark Arrestor **Shaft:** Flex Type **Reduction:** None **Cutting Head (Std):** 5" Dia. **Cutting Swath:** 18 in. **Weight (with cutting head):** 11 lbs (5kg)

Powered by the proven 22.5 cc engine, here is a string trimmer—that's more than a string trimmer. Model 2500 comes equipped with a new Universal TFC™ head for fast, efficient grass and weed trimming. Just switch to one of the optional quick-change metal blades and you've got a great brush cutter or tree pruner. The performance of this unit in tough brush and pruning operations has to be seen to be fully appreciated. The brush blade lets you cut through heavy brush and vines up to 3/4 inch in diameter. The saw blade, used with a combination chopping/sawing action can slice easily through branches up to three inches in diameter. It is equipped with a straight solid-steel shaft with spiral-bevel gears. Four optional heads are available for this unit—see chart on back page.

SPECIFICATIONS:

Engine Type: Upright 2-Cycle Air Cooled **Cylinder Type:** Single Alum. Alloy Chrome Plated **Displacement:** 22.5 **Bore & Stroke mm:** 32 x 28 **Compression Ratio:** 6.5:1 **Max H.P. (H.P./RPM):** 1.2/6500 **Carburetor:** Slide Type All Position **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled **Lubrication (Fuel Mixture):** 20 to 1 **Fuel Capacity:** (.6L) 64Qt. **Muffler:** Spark Arrestor **Shaft:** Solid type 8mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std):** 5" Dia. **Universal TFC Cutting Swath:** 18 in. **Weight (with cutting head):** 13 lbs (5.9kg)

★ Blades and blade guards shown in top photo are optional items

★ Fuel mixture ratios shown in specifications are with conventional 2-cycle oils. For convenience and long engine life we recommend ONE-MIX™, the great new multi-ratio oil

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"STANDARD OF THE INDUSTRY"

MODEL 3000 SS Now with more power—plus solid-state ignition



Commercial-quality TFC™ Tap-For-Cord head equipped with Green Line extra long-life nylon string. (Model 3000SS, as well as 2500, 4000, and 4500, also accept metal blades for brush cutting and tree pruning.)



MODEL 3000SS

The Pro's Choice.

This Green Machine has set the standard for commercial-quality trimmers. Thousands are in use by professional gardeners, grounds maintenance crews, and large-acreage owners. The 3000SS has been made even better with a new, more powerful engine and solid-state ignition. Like the 2500, these units can also be used for brush cutting and tree pruning, using the accessory metal blades. Model 3000SS comes equipped with the commercial quality TFC™ Tap-For-Cord string trimmer head—the first automatic-feed head built for the professional. Other heads available include the ultra-simple, 2-string (.105) manual head designed specifically for rental-yard and other special uses. Quality features include: solid, heat-treated drive-shaft and spiral-bevel gears; anti-vibration clutch housing with dual bearings; larger, quieter muffler and air cleaner; larger gas tank.

SPECIFICATIONS:

Engine Type: Upright 2-Cycle Air Cooled Cylinder
Type: Single Alum. Alloy Chrome Plated **Displacement:** 24.1 **Bore & Stroke mm:** 32 x 30 **Compression Ratio:** 6.5:1 **Max H.P. (H.P./RPM):** 1.3/6500 **Carburetor:** Slide Type All Position **Ignition:** Solid-State-Transistor Type **Clutch Housing:** Anti-Vibration **Lubrication (Fuel Mixture):** 25 to 1 **Fuel Capacity:** (.7L) .74Qt. **Muffler:** Spark Arrestor **Shaft:** Solid type 8mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std):** 6" Dia. TFC Cutting Swath: 18 in. **Weight (with cutting head):** 15 lbs (6.8kg)



MODEL 4000

The high-production trimmer, brush cutter.

This is the high powered Green Machine designed specifically for specialized, day-after-day trimming of grass, weeds, and brush. A harness with hip-pad and wide handle bars provides maximum operator efficiency for such demanding operations as highway road-side maintenance. The 37.4 cc easy-starting engine has power to spare to operate the commercial TFC™ head with .105 cutting string. Other heavy-duty features include larger drive shaft and larger spiral-bevel gears. With accessory blades, the swiveling center shaft of the 4000 makes it ideal for hillside brush cutting and pruning of low-hanging tree branches.

SPECIFICATIONS:

Engine Type: Inverted 2-Cycle Air Cooled Cylinder
Type: Single Alum. Alloy Chrome Plated **Displacement:** 37.4 **Bore & Stroke mm:** 38 x 33 **Compression Ratio:** 9.1:1 **Max H.P. (H.P./RPM):** 2.7/7500 **Carburetor:** Slide Type Float **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled With Swivel **Lubrication (Fuel Mixture):** 20 to 1 **Fuel Capacity:** (1.1L) 1.17Qt. **Muffler:** Spark Arrestor **Shaft:** Solid 10mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std):** 6" Dia. TFC Cutting Swath: 20 in. **Weight (with cutting head):** 21 lbs (9.5kg)



MODEL 4500

The Green Machine Forestry unit.

Modern forestry practice demands fast, efficient tree and brush clearing. Here is the tool for the job. Using a combination chopping-sawing action, saplings up to 4 inches in diameter can be felled in a single stroke. One man equipped with the 4500 becomes a formidable system of forestry maintenance. This unit is specially-designed to withstand the continuous side-shock impact imposed by this type of work. Extra anti-vibration features as well as an exceptionally heavy-duty shaft are included. The special handle guards help protect the operator. The 4500 comes equipped with brush blade, saw blade and blade guard. The commercial quality TFC™ Tap-For-Cord head is available as an option.

SPECIFICATIONS:

Engine Type: Inverted 2-Cycle Air Cooled Cylinder
Type: Single Alum. Alloy Chrome Plated **Displacement:** 37.4 **Bore & Stroke mm:** 38 x 33 **Compression Ratio:** 9.1:1 **Max H.P. (H.P./RPM):** 2.7/7500 **Carburetor:** Slide Type Float **Ignition:** Contact Point Type **Clutch Housing:** Direct Coupled With Swivel **Lubrication (Fuel Mixture):** 20 to 1 **Fuel Capacity:** (1.1L) 1.17Qt. **Muffler:** Spark Arrestor **Shaft:** Solid 12mm **Reduction:** 1.26 Gear Drive **Cutting Head (Std):** Blades **Weight (with cutting blade):** 22 lbs (10kg)

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 HMC, 22133 South Vermont Avenue, Los Angeles, California 90502

5. Give warnings but not threats. However, a worker should be clearly aware of the consequences for his unwillingness to meet the expectations set for him.

6. Give a worker frequent feedback and thanks for his help and progress. Positive feedback on shortcomings and progress, along with encouragement, build a strong working relationship.

7. Get your own emotions under control before entering a confrontation situation.

8. Do not holler, bully, or manipulate a worker into doing something. But calmly and decisively direct a worker into the area of achievement and performance you desire.

9. Avoid threatening situations. Do not suggest organizational changes which affect personnel or areas of major work or leadership responsibility without first consulting those workers who will be affected.

10. Learn to perceive employee problem situations before they manifest themselves, and take decisive, preventive action. First, check the job situation—the task involved, yours or another's supervision, co-workers, etc.—to see how that might be influencing a worker's attitude and performance. Lastly, be aware of things outside the job which may be affecting a worker's attitude and/or performance. If a worker can confide in you as a

friend, then you can point out how his work performance has been altered, help him define the problem influencing his performance, and perhaps help direct him toward a solution. Depending on the seriousness of the problem, it may be necessary to bring other supervisors or administrators into the situation. Do not try to diagnose the problem or counsel the employee.

11. Be willing to withdraw a person from a task or responsibility that is clearly beyond his present capabilities and tell him why, without demeaning him or his efforts.

In Working and Teaching.

1. Demonstrate by doing—be a working supervisor wherever and whenever possible.

2. Be willing to be a teacher. Share your knowledge and skills.

3. Allow for (expect and tolerate) mistakes; that's how we all learn.

4. Foster a working climate which permits a worker to question, suggest, invent, learn, and change.

5. Be a friend. Be willing to get involved with a co-worker. But clearly have in mind the limits of your own ability and responsibility.

WTT



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RESULT:
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Big protection at a small price.

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RESULT:
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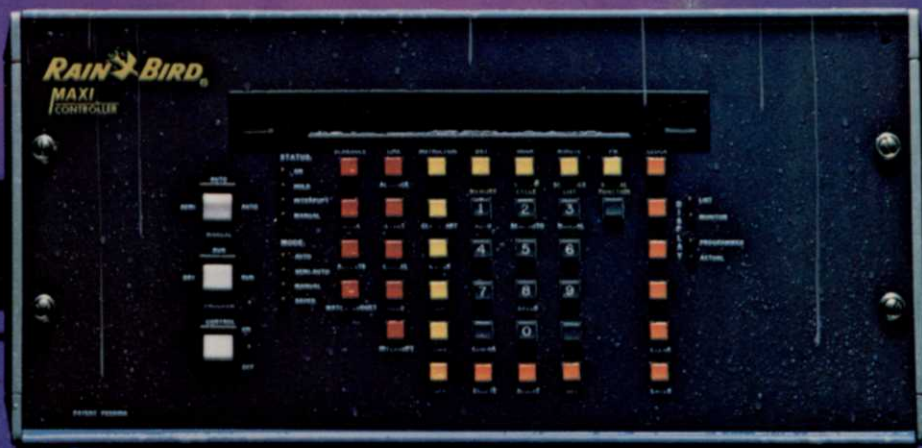
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effectively adjust its sprinklers.

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propelled mower.

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propelled mower.

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BOOKS

FINAL TOUCHES PUT ON TURF BOOKS

The turf industry will soon benefit from two new books currently in production. The first, *Turfgrass Management*, by Dr. Al Turgeon is due out this month. The second is Dr. James Beard's remake of a book by H. Burton Musser entitled *Turf Management for Golf Courses*.

Turgeon, who made his reputation at the University of Illinois, Champaign-Urbana, now directs a Dallas research branch of Texas A&M. The new book is illustrated by F.A. Giles, associate professor of horticulture at the University of Illinois. This publication was designed to fit the niche between the highly technical publications and the insufficiently technical ones, a niche growing as the competency of the turfgrass manager rises to new levels.

Turfgrass Management has nine chapters, depending heavily on illustrations to make information directly applicable to field conditions. Every effort is made to explain turfgrass growth and disease in terms of a plant's position in its environment, a holistic approach.

The first chapters examine the basics of turfgrass growth. A chapter on taxonomy and climatic adaptation provides data on identification and cultural requirements of a wide variety of grasses. Middle chapters look at the components of the turfgrass environment — atmospheric, soil, and biotic influences that effect growth, health, and propagation. Others chapters cover cultural practices, pest control, propagation for maximum yield, and customized propagation and maintenance techniques for a variety of sites. Appendices contain relevant data on pesticide chemistry, calculations, and conversion. The book includes a glossary.

If you are familiar with Dr. Turgeon's work in the past, chances are you'll want a copy of his book. One turf specialist in the Midwest told us he expects to use the book in the classroom this coming fall. You can order the book by filling out the coupon on page 55.

Dr. Beard has spent the last five years remaking a book with tremendous history, *Turf Management* by H. Burton Musser. The new book carries the title *Turf Management for Golf Courses* and in Beard's words is not a revision. At least six months will pass before the book is available for purchase. It is a broad look at all turf practices on golf courses, including bank stabilization, irrigation, greens, tees, etc. Apparently, the book will include history drawn from Musser's book as well as up-to-date technical information. We'll keep you informed on the progress of the book in production.

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