Is there a tub grinder in your future?

by Daniel Ingham

Tub grinders can achieve greater material reduction rates than chippers and produce a more marketable product.

In recent years, arborists have been confronted with the need to process wood waste in ways that keep it out of landfills and do not create added operating costs. In many cases, this means chipping wood on-site and leaving it there. Where this is not possible, the only other alternative is usually a composting site, which also requires tipping fees, though lower than a landfill. But there may be other options you have not considered.

Using chippers to reduce wood waste is fine, but can be time-consuming as you get into larger volumes of waste reduction. If you are reaching a scale of operation where you are considering buying additional chippers, you may want to consider another alternative — a tub grinder.

High technology has spilled over into the tub grinder market. Increased interest in small-scale or on-site composting projects has prompted several companies to manufacture state-of-the-art tub grinders that rival today's chippers in size and price, and will outproduce them hands down. In fact, a single tub grinder can do the work of several chippers and produce an end product that will have more value than that produced by a chipper.

New survey

A recent study conducted by the International Society of Arboriculture shows the volume of tree and landscape residue produced in the United States. The survey included 1,331 respondents, 638 of whom were arborists. The report, prepared by Jack Whittier, Denise Rue and Scott Haase of NEOS Corp. in Lakewood, Colorado, lists the amounts and types of yard residue and disposal preferences. The report states, "For the United States, the generators reported slightly over 17 million cubic yards per year of residue produced." It goes on to break down the form this waste took. "Most tree and landscape residue is generated in the form of chips. Over 11 million cubic yards of chips, or 67 percent of total residue, are produced every year. Unchipped tops and brush follow at 1.3 million cubic yards per year. The least amount of urban tree and landscape residue comes in the form of whole stumps and unchipped logs."

An interesting point made in the report's conclusion, one which the green industry should consider, was record keeping. "It was revealing to discover the lack of knowledge by industry personnel on the actual volume and characteristics of the residue they generate. Ninety-five percent of the data reported

Daniel Ingham is the equipment editor for Arbor Age, a Cathedral City, California trade magazine that serves arborists. This article is reprinted with permission from the May 1995 issue of Arbor Age.
on the survey forms was estimated by the respondents. The lack of formal accounting methods for monitoring residues is an important missing parameter for obtaining residue information,” says the report.

One of the tables in the report (reprinted here) gives the methods of disposal reported by respondents and the percentages of waste disposed of by the various methods.

### Mulch and compost

States, faced with landfills nearing capacity and skyrocketing costs to open new sites (because of U.S. Environmental Protection Agency regulations), are relaxing rules on yard waste composting facilities. Many states are also promoting the widespread use of compost and mulch products for every conceivable industry, from cogeneration power plants to large-scale agricultural use as a means to reverse years of topsoil erosion.

Mulch is one of the most common garden uses for wood chips. Placed in planting beds or around the bases of trees, wood chips can help retain soil moisture and prevent weeds from growing as chips slowly decompose. Chips produced by a chipper work well for this purpose. But, because they decompose slowly, you will find that you produce more chips than you can dispose of in this manner.

George L. Machado, an organic composting consultant from Zephyrills, Florida, says, “The material that comes out of a chipper has a smooth surface. A tub grinder produces an end product that is shredded and has rough surfaces. This allows greater access for microbes and speeds decomposition either in compost or as a mulch.”

Machado advises small- and medium-sized compost facilities on how to market their compost to local nursery and garden stores and make a profit. One piece of equipment that composters all have in common is some type of tub grinder. “Everyone thinks that bigger is better, but that is not necessarily true. In most cases, a chipper is too small to do the necessary work, but that does not mean you need the largest tub grinder made,” says Machado.

<table>
<thead>
<tr>
<th>Disposal method</th>
<th>Yards (1)</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Giveaway</td>
<td>7,115,233</td>
<td>42</td>
</tr>
<tr>
<td>Landfill</td>
<td>2,916,751</td>
<td>17</td>
</tr>
<tr>
<td>Sold</td>
<td>2,103,695</td>
<td>12</td>
</tr>
<tr>
<td>As mulch</td>
<td>899,382</td>
<td>5</td>
</tr>
<tr>
<td>As firewood</td>
<td>469,618</td>
<td>3</td>
</tr>
<tr>
<td>As boiler fuel</td>
<td>349,086</td>
<td>2</td>
</tr>
<tr>
<td>As wood products</td>
<td>166,175</td>
<td>&lt;1</td>
</tr>
<tr>
<td>As compost</td>
<td>197,925</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Other</td>
<td>21,509</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Leave on-site</td>
<td>1,866,479</td>
<td>11</td>
</tr>
<tr>
<td>Send to recycling</td>
<td>1,060,969</td>
<td>6</td>
</tr>
<tr>
<td>Burn for energy</td>
<td>443,959</td>
<td>3</td>
</tr>
<tr>
<td>Stockpile/use on-site</td>
<td>757,821</td>
<td>4</td>
</tr>
<tr>
<td>Incinerate, no energy</td>
<td>49,018</td>
<td>&lt;1</td>
</tr>
<tr>
<td>recovery</td>
<td>571,768</td>
<td>3</td>
</tr>
</tbody>
</table>

(1) Cubic yards per year


Just as the chips produced by a grinder are better suited for composting, they produce a better mulch product for planting beds as well. They decompose faster, hold moisture better and are less likely to bleach out. A tub grinder

---

**ADVANCED TECHNOLOGY FOR RECYCLING SYSTEMS IN PLASTIC RECLAIM**

**SERVICE SYSTEMS**

Design and supply building layouts of equipment; design electrical and mechanical systems for certification.

PCR Systems, Inc. can be your one-source equipment company.

PCR Systems, Inc. can also provide complete system installation and startup.

90% of system equipment made in America

PCR Systems, Inc.
166 Bradley Corners Road
Madison, CT 06443
800-344-1946
800-344-1972 fax

---

**OIL FILTER RECYCLERS!**

As regulations get tougher, making money is getting easier . . .

with the

**E-Z FILTER CUTTER™**

- High Output/Hr.
- Multiple Filters Handled
- Fast Payback
- Simple to Operate
- Patented

**Recycle Faster For More $$$**

LEASE OR PURCHASE. TERRITORIES AVAILABLE

mikron corporation
815 Deer Trail Court
Mendota Heights, Minnesota 55118 USA
Tel/Fax: 612-688-8889

Circle 293 on RR service card

Circle 9 on RR service card
will also make it easier to find a nursery that is willing to take the raw product off your hands for free.

Even if you chip all the wood you take to a composting facility, that facility will have to run it through a grinder to shred it before composting. If the product you bring them is already shredded, you may be able to persuade the facility to lower its tipping fees because you will save it time and wear and tear on its machinery.

Another possibility for your shredded wood product is the farm market. Farmers have been composting for a long time. Because practices like deep plowing and the use of chemical fertilizers have led to soil depletion and loss of valuable topsoil, farmers are switching to practices like "no-till" and the use of composts to reduce erosion and use of fertilizer.

A shredded wood mulch can be used as a bulking agent for manure composting or applied directly to fields. A shredded wood mulch will improve the soil's profile and water retention characteristics as it decomposes. If there are farms in your area, you may want to contact them.

---

**Chipping away**

- Shredded, rough-surface wood chips decompose faster.
- They can serve as a bulking agent for compost or be applied directly to fields.
- Shredded wood mulch improves the retention of moisture in the soil.

**Tub grinders today**

With wood waste recovery and recycling on the rise, companies across the country are doing what they can to stay on the cutting edge of this growing industry. Watson's Tree Service of Niles, Michigan is no exception. President Tom Watson grinds and markets a variety of products - everything from shredded bark and finely ground wood chips to mushroom compost and shredded topsoil. Watson and his family stay busy grinding out 30,000 to 40,000 cubic yards of mulch and landscaping products each year. With Michigan's strict no-burn regulation soon to take effect, Watson anticipates even more work ahead.

In the tree business for more than 20 years - five of which have been in tub grinding - Watson knows it takes a tough, heavy-duty piece of machinery to handle the abuse of varying degrees of wood and yard waste. Experience has also taught him it takes a good grinder to stay productive day in and day out. Currently, he uses a large tub grinder with a 400-h.p. motor with 20-pound cutter block hammers on the mill. It also has replaceable, carbide-tipped teeth that not only chew up heavy materials like logs and stumps, but effectively handle tangled, thick yard waste as well.

"It actually outperforms my bigger horsepower machines," says Watson. "The tub I was using before would handle stumps and pallets O.K., but when it came to moist, gnarly yard waste, it would often get bogged down. Sometimes we'd have to grind the same material two or three times. With this machine, one time through and the job's done."

Foreman Steve Watson seconds that opinion. "Lots of grinders can do stumps and pallets, but the most difficult material to grind is damp and tangled yard waste - grass, limbs, leaves and branches."

Watson's Tree Service expects to grind out at least 200 to 300 yards of mulch each day.

---

**COMING SOON TO A CLEAN-UP SITE NEAR YOU...**

**SET UP QUICKLY, PROCESS, SEPARATE AND MOVE ON.**

When productivity and portability are what you need for C&D debris, landfill and disaster clean-up, look to RSTI.

Our proven line-up of portable trommel screens and wash tanks set up quickly for efficient processing, separating and stockpiling of wood, bark, soil, rock, gravel, concrete, brick, plastic, ferrous and non-ferrous metals. When the job is done these highway permittable units move on to the next project.

For competitive prices on RSTI portable equipment and complete recovery systems, call us toll-free today.

**RSTI**

(800) 75-WASTE

(206) 542-9347 • FAX (206) 542-2819

Circle 403 on RR service card

---

**RSTI 620-D is one of a full range of RSTI portable trommel screens designed for use with the RSTI portable wash tank in C&D, landfill and disaster clean-up applications.**

---

**When productivity and portability are what you need for C&D debris, landfill and disaster clean-up, look to RSTI.**

**RSTI 620-D is one of a full range of RSTI portable trommel screens designed for use with the RSTI portable wash tank in C&D, landfill and disaster clean-up applications.**

---

**COMING SOON TO A CLEAN-UP SITE NEAR YOU...**

**SET UP QUICKLY, PROCESS, SEPARATE AND MOVE ON.**

When productivity and portability are what you need for C&D debris, landfill and disaster clean-up, look to RSTI.

Our proven line-up of portable trommel screens and wash tanks set up quickly for efficient processing, separating and stockpiling of wood, bark, soil, rock, gravel, concrete, brick, plastic, ferrous and non-ferrous metals. When the job is done these highway permittable units move on to the next project.

For competitive prices on RSTI portable equipment and complete recovery systems, call us toll-free today.

**RSTI**

(800) 75-WASTE

(206) 542-9347 • FAX (206) 542-2819

Circle 403 on RR service card
Asplundh (Birmingham, Alabama) is also increasing its use of tub grinders in some applications with the institution of centralized wood chipping and parking/refueling operations. For its line-clearance work with the Birmingham Division of Alabama Power Co., Asplundh has switched from chippers to grinders. With this new system, Alabama Power reports that 78,000 cubic yards of wood waste were kept out of local landfills in 1994.

Geoffrey Kempter, manager of technical services for Asplundh, says, "It's a site-specific application when using tub grinders rather than chippers. You go from using several machines to only one, and you trade one set of advantages for another set. The grinder is less labor-intensive, and more material of all sizes can be processed."

What they do is this: The Asplundh crews doing clearance work for Birmingham Power are kept productive by eliminating the need for the crews to chip brush and move logs on-site. Knuckleboom-equipped trucks follow the crews, pick up the waste and haul it to a site outside the city where a tub grinder processes it. The trucks will follow as many as 15 crews at a time, hauling debris to the grinding site. More than 500 tons of wood debris are handled this way every week.

A wood waste broker then sells the processed wood to various industrial plants for boiler fuel. About 10 percent of the wood, left in the form of logs, is sold for pulpwod or saw logs.

To make the operation even more efficient, trucks are fueled at a central facility. Instead of drivers taking time out during the day to refuel, a fuel truck is brought to the site where the trucks are parked and fueling is accomplished after hours. Because these parking and grinding sites can be changed at any time, the operation can maintain maximum flexibility and efficiency by keeping travel time to a minimum.

Expanding opportunities

If you have been thinking of ways to expand your business, you may want to look into composting/grinding rather than additional tree work. Many states are offering financial incentives to entrepreneurs who are willing to begin composting operations for yard waste. And, if you think of it, tree work and composting are made for each other. They can be lucrative and complementary businesses.

A problem that has plagued many small composting operations is the lack of a constant, reliable supply of material. Being able to market and sell a product means being able to forecast the supply of material needed to make it. A company engaged in arbor work can start a composting business easier than one starting from scratch. Arborists have a known and predictable supply of material.

Another advantage is that tree companies already have most of the equipment necessary for a composting operation, including the tub grinders. And, the early losses realized by composting sites can be offset by savings realized on tipping fees. By contacting fellow arborists in your area, you can increase your business by catering to their needs and charge them to do it. Many composting facilities will not accept stumps, leaving arborists with the problem of disposing of them after they've gotten rid of everything else.

In April 1994, Arbor Age published "Recycling tree waste: Cost-effective options." The story profiled Romer Bros. Tree Service of Decatur, Illinois. Romer Bros. was one of those companies that began recycling as a way of reducing the cost of dumping, and providing a service that did not exist in its area.

At that time, Mike Romer says, "Our first incentive was rising landfill costs in this area. I started researching recycling and realized that there were no other companies that provided the service. I kept reading about recycling options in Arbor Age and other trade magazines, and we finally decided to give it a shot."

The start-up cost was about $70,000 because Romer had to buy a grinder and a front loader. But, since Romer was spending about...
$20,000 a year in tipping fees by that time, it seemed worthwhile. The company was right. It did not compost its material because there was a ready market for the raw material produced by the tub grinder. Romer says, “The key is to selling material is to provide delivery. People want the convenience of calling you up and having it dumped on their driveaway.” Romer also delivered material to nurseries, schools and park districts. In addition, the company rented out its grinder and operator to contractors and municipalities for on-site grinding work.

Although the tree business is still Romer’s bread and butter, it now has a full-fledged side business that goes by the name of Romer Bros. Environmental Recycling Inc. The new company recycles all types of wood products, from tree waste and pallets to railroad ties and telephone poles. It still does not compost; instead, the company sells the processed wood as mulch, fuel or as bulk material for composters. One of the more interesting uses for its product is in power cogeneration. “There are several utilities that are experimenting with wood waste instead of coal to produce electricity,” says Romer. “They use the railroad ties we grind up. Right now they’re getting about 8,000 to 9,000 Btus, so it is looking pretty good. The main thing we are doing is experimenting with the right size chip to produce the best result. The chip size that we produce for cogeneration is 3/8-inch or less.” It takes three grindings for Romer Bros. to produce this size chip and to be sure there is no metal left in the product before it is shipped to the power plants. “Metal is not very good for the boilers if it gets into the mix, and old railroad ties tend to have nails and spikes in them,” says Romer.

But what about profit? “In the last year, we’ve invested about $350,000 in equipment. The recycling company is not making a clear profit yet, but it is saving the tree company a lot of money on disposal,” says Romer. “The way we look at it, the recycling company ensures the long-term viability of the tree company because we have eliminated our disposal problems. Also, we make business contacts back and forth. For example, someone may have asked us about recycling services and we will end up getting more tree work as well and vice versa.”

When asked about the operating costs of tub grinders, Romer offers a warning. “What really surprises a lot of people when dealing with tubs is the operating costs. A tub grinder can be expensive to operate. Grinders, depending on the size, can cost quite a bit more than chippers to operate when you consider fuel usage and maintenance. This is heavy machinery, after all.” However, Romer continues, “The trade-off is in the reduction rate. Depending on the material, we have achieved material reduction rates as high as four-to-one. No chipper can achieve that kind of volume reduction. For this reason, we are relying on tub grinders for more of our tree work.”

Romer stresses that tub grinders are a long-term investment that need to be carefully researched. Unless you can keep the grinder busy or employ it in a way that helps eliminate tipping fees, you may not realize the expected return on your investment. The bottom line is to do your homework. Research alternate means of disposal, possible profit-producing markets and additional services you may offer.

Toward this end, Romer Bros. is a member of the Composting Council. “It’s expensive to join, but it has been well worth it,” says Romer. “They have helped sell our business, and even though we don’t compost, we grind material for composters. But to do it, you need to know how they need it done or they won’t accept it. I would encourage membership for the networking value alone.”

**Computerized composting**

In an effort to promote on-site composting on golf courses and country clubs, Toro Company (Bloomington, Minnesota) has developed a computer program to show golf course superintendents how the purchase of a tub grinder can help them reduce tipping fees and produce their own soil amendments in the bargain. This program enables them to enter data based on plant types, acreage, local tipping fees and past disposal costs to determine how much money they can save over the long run.

Toro’s new recycling division is marketing a service package that revolves around a tub grinder. It is a small unit that can be towed by a 1/2-ton pickup and can be set up in about five minutes. It is designed to be used by those without heavy machinery experience to produce their own soil amendments in small composting/recycling operations. To accompany the tub grinder and software, Toro publishes a small but informative pamphlet that tells how to begin and maintain a small composting operation.

As landfills close and the costs and barriers to new ones continue to rise, alternative methods of disposal will need to be found. Ironically, the solutions to many of these problems are already available, if you look where to look. To help all of you, we have compiled a list of organizations that can facilitate your efforts to recycle. They can provide information, contacts and more. The sooner you find out what your options are, the sooner you can get on with your business.

For a free copy of the list of organizations, contact Daniel Ingham at Arbor Age, 68-860 Perez Rd., Suite J, Cathedral City, CA 92234; (619) 770-4370, (619) 770-4380 (fax).