

# Profitable Outlets For Wood Wastes

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BY FAILING to use wood residues, private industry is neglecting a valuable source of additional revenue.

The search for profitable outlets for sawdust, chips and similar wood wastes is often instigated by the need for reducing costs of disposal. Incinerators have been tried but the initial installation is expensive and incineration produces no useful product. Today, many municipalities and industries are utilizing chippers to reduce their waste wood to valuable chips which are selling for \$15 to \$40 per ton (depending on grade) throughout the United States.

Geographic separation of sources and markets and transportation problems arising from bulkiness severely limit profitable outlets for wood residues. Freight costs restrict the longest distance that low-grade material can be transported to about 100 to 200 miles. The feasibility of drying and compressing chips to economize on transportation and storage costs is being investigated. An automatic baling machine for wood wastes, recently developed in England, significantly decreases bulk and increases handling ease.

There is considerable variation between the chemical and physical properties of wood residues among species and tissues within a species.

Thus, any high-grade utilization usually requires large amounts of clean, dry, relatively homogeneous material from a single species or from a limited number of species with similar characteristics. Frequently, however, the residue obtained is from a mixture of unrelated species and some undesirable "waste" remains even after processing. These factors indicate that initial commercial development should concentrate on the utilization of whole residues independent of its physical and chemical properties.

The primary uses for low-grade wood wastes can be grouped under three main categories: (1) fuel, (2) agricultural and (3) fiber.

Recent appraisals of the use of wood wastes as a fuel and of the equipment necessary for firing have appeared favorable. Improved multiple-fired burners have been developed, together with heavy duty presses that are capable of obtaining positive fuel values even from water-soaked material. Wood residues with up to 65% moisture can be burned. Kiln-dried wood residues produce about one-half the amount of heat from fuel oil or three-fourths of that from mineral coal.

Anerobic decomposition of wood wastes produces methanol, a high quality fuel that can be used in the basic areas of energy, such as transportation and heating. Wood

wastes could be composted alone or in conjunction with other organic wastes such as garbage and sewage.

Methanol processing plants have been operational in Europe for a number of years but, although the economic and ecological value is well established, widespread interest has not developed in the United States.

Widespread interest, however, has developed in charcoal briquets and artificial logs in all parts of the United States as well as other nations.

Operational plants in Maryland, West Virginia, and Oregon utilize sawdust, woodchips and bark to produce compressed briquets for outdoor grills. Particle size or the species is not a primary concern since the material is shredded and mixed to produce a relatively uniform product.

Artificial logs for household fireplaces, barbecues and stoker fireplaces are produced by pressing and extruding fine wood particles with or without a wax binder. Either kiln-dried or green material can be used, depending upon the process.

The value of wood residue as a mulch, soil conditioner, and for animal bedding and roughage is well documented.

As a soil conditioner, wood and bark improve tilth, structure and

*(continued on page 42)*

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## WOOD WASTES *(from page 32)*

aeration and increase water absorption and nutrient retention. Early literature on the subject reported toxic effects from wood residues in the soil. However, the yellowing associated with incorporating fresh wood is the result of nitrogen depletion from microbial decomposition and can be prevented by adding supplemental nitrogen. Reports of allelopathy, that is, actual toxicity from chemical extractives in wood and bark are rare.

As mulch, bark and wood conserves moisture through weed control and reduced evaporation, maintains temperature uniformity of the soil and improves granulation of surface soils, reduces topsoil erosion, and is esthetically appealing in landscape design.

Shredded wood and bark are excellent as animal bedding and poultry litter. The resultant material can be composted or worked into the soil as a conditioner and fertilizer. Research also indicates the

value of shredded wood and sawdust as roughage in the diet of feedlot cattle fed high-energy grain.

Structural board can be made from almost any type of whole or residue wood of any species. Wood chipped for board materials may not need to be debarked if certain production difficulties can be tolerated, e.g., variations in quality that are hard to control. In general, bark has less fiber than wood so board strength is somewhat lower. Nonetheless, boards containing up to 30% or 40% bark and still meeting standard specifications have been produced in Scandinavia.

Panels with properties equivalent to homogeneous boards may be produced by using high quality flakes only on the surfaces and using lower quality flakes or particles as core material.

The German Bison process, a recent change in mat-laying technology produces a graded density board with longer, stronger splinter-like shavings at the core and fines at the surface.

Structural boards can be made with large flakes, strands or fibers. Orientation of all or part of the particles can impart high binding and stiffness properties. One developmental process aligns fibers through an electrostatic field, allowing the use of a limited amount of leaves and waste paper as well as unbarked chips and sawdust of mixed species.

Traditionally considered as waste to be dumped or burned, wood residues are a valuable resource. Thousands of tons are available throughout the United States as a by-product of the lumber industry, public utility line clearance and private tree services. In Buffalo, New York, alone, The Davey Tree Expert Company has a stockpile of over 60,000 cubic yards of chips and accumulates an additional 20,000 cubic yards annually. With worldwide shortages of energy and materials, wood wastes offer a myriad of revenue sources that should not be allowed to go up in smoke. □

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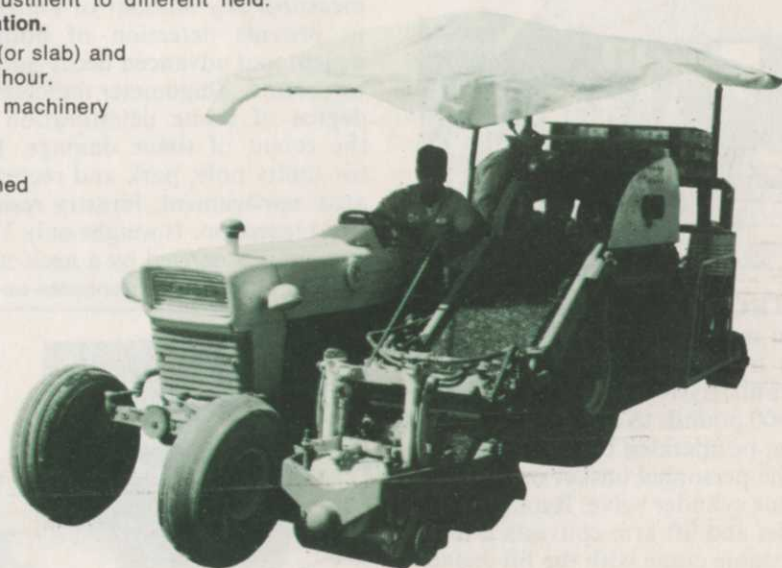
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