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The University of Georgia

College of Agricultural & Environmental Sciences

**Department of Biological & Agricultural
Engineering**

**Mulching Wood Waste:
The Manufactured
Housing Industry Wood
Byproducts and Waste
in Georgia**



Topics of Discussion

- **Wood waste Production**
 - ◆ **Regional Distribution of Manufactured Housing Wood Residue in Georgia**
 - ◆ **Wood residue generated by the industry**

- **Wood waste Characterization**
 - ◆ **Species of wood residue**
 - ◆ **Contamination**
 - ◆ **Disposal**

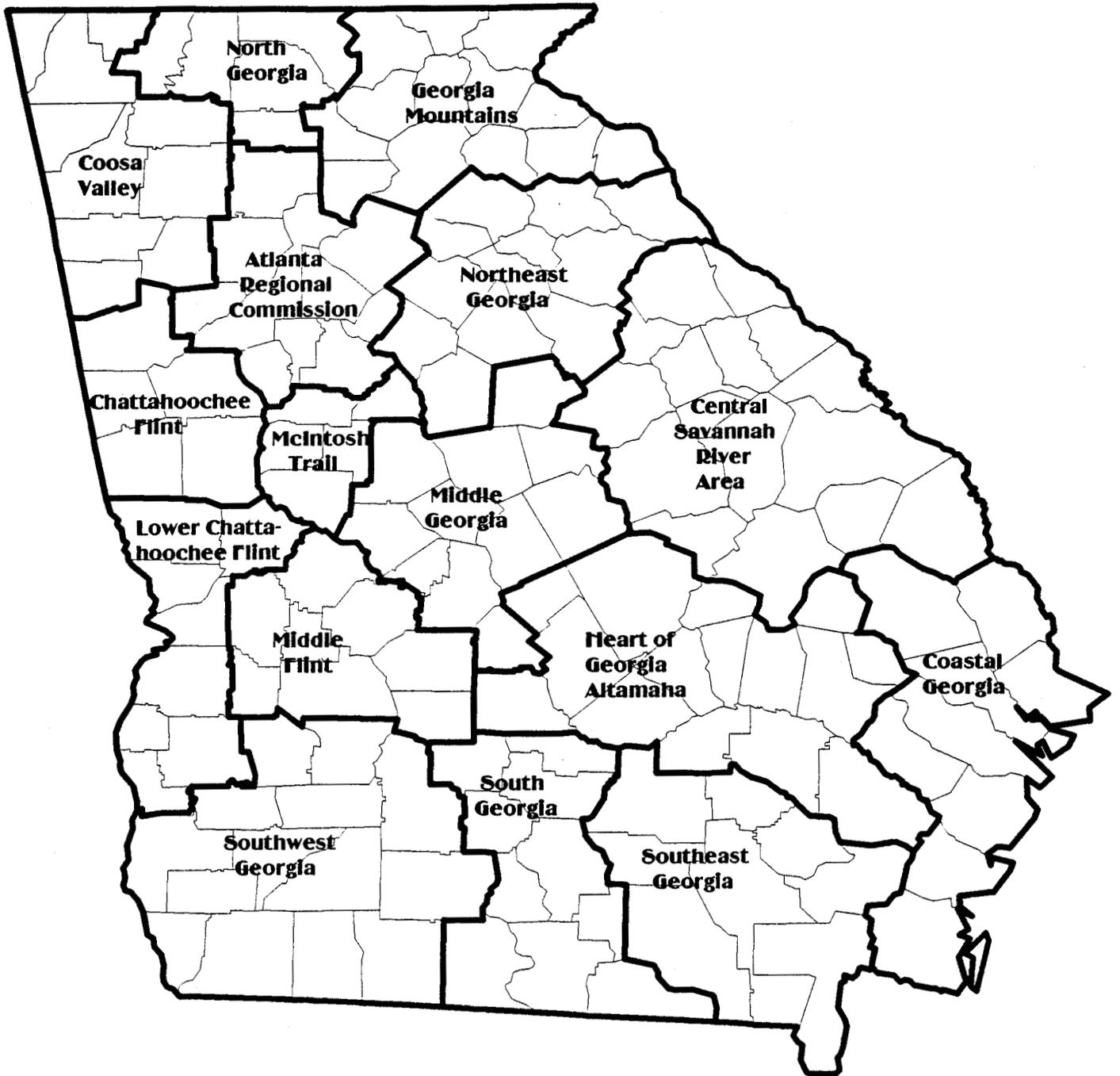
- **Uses**
 - ◆ **Mulch**
 - ◆ **Animal Bedding**

- **Further Information**

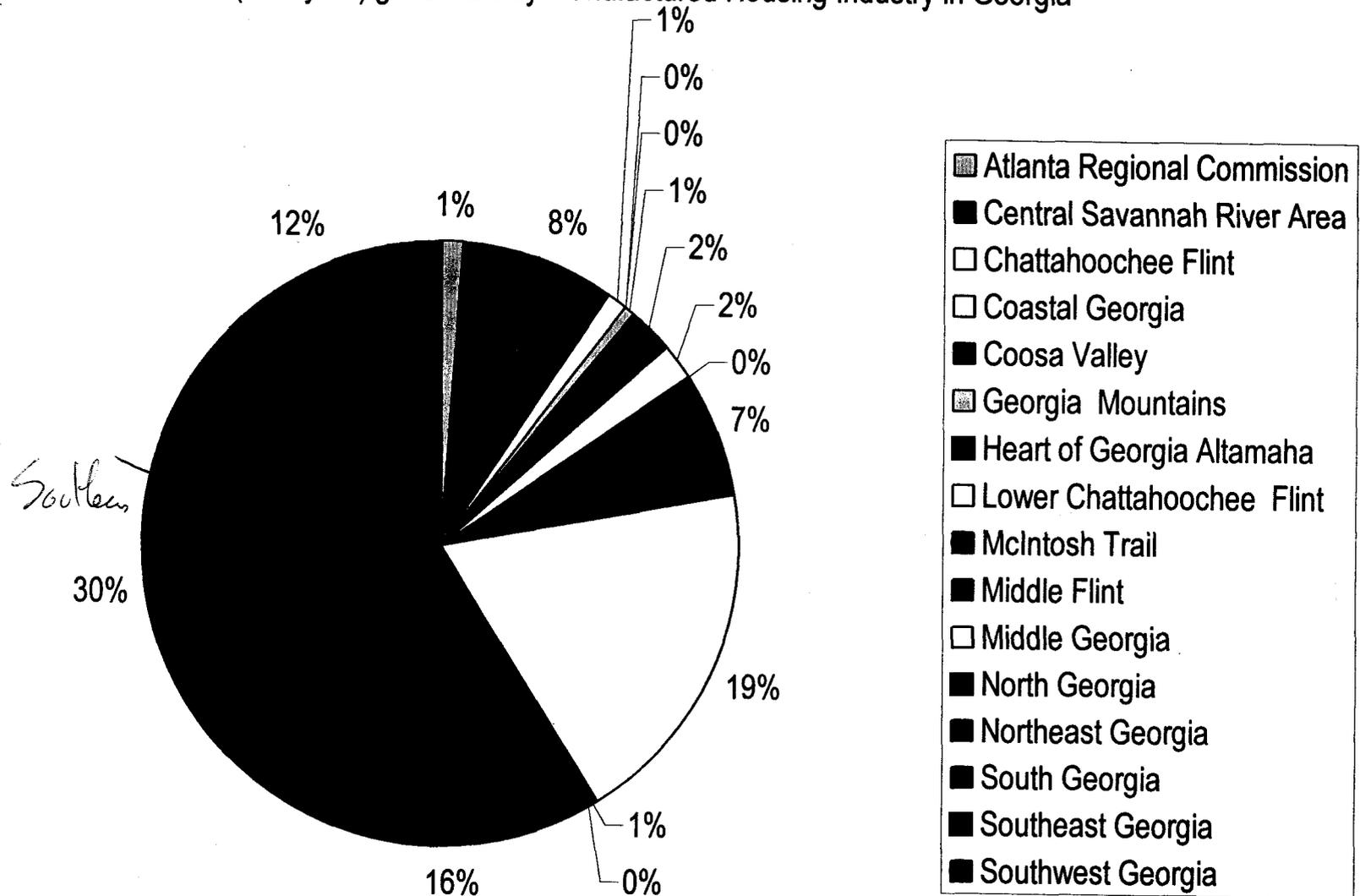
Total Wood Byproduct and Waste

RDC	Estimated Wood (tons/year) generated by Manufactured Housing Industry in Georgia
Atlanta Regional Commission	70
Central Savannah River Area	580
Chattahoochee Flint	89
Coastal Georgia	0
Coosa Valley	3
Georgia Mountains	42
Heart of Georgia Altamaha	163
Lower Chattahoochee Flint	133
McIntosh Trail	7
Middle Flint	470
Middle Georgia	1308
North Georgia	40
Northeast Georgia	3
South Georgia	1082
Southeast Georgia	2157
Southwest Georgia	822
Total	6969

Regional Development Centers



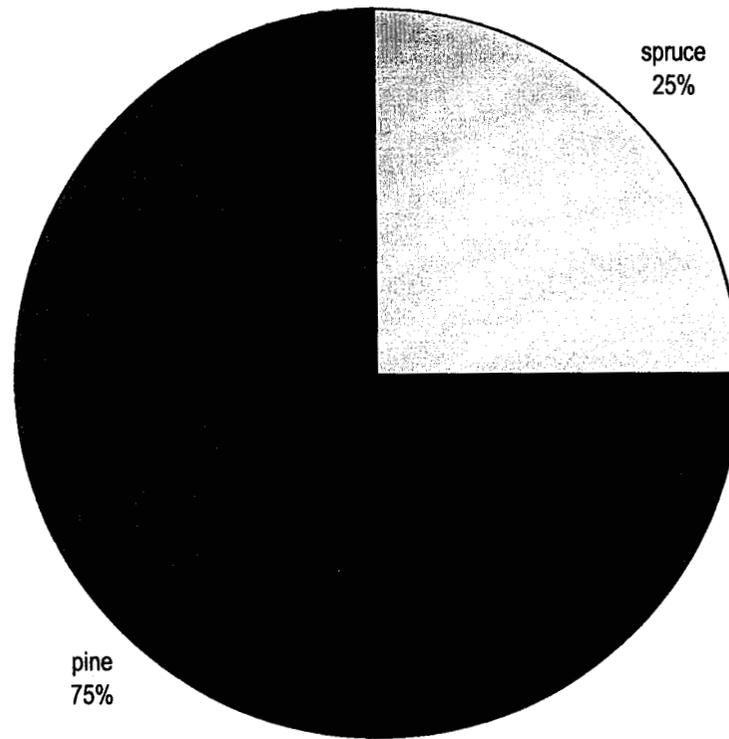
Estimated Wood (tons/year) generated by Manufactured Housing Industry in Georgia



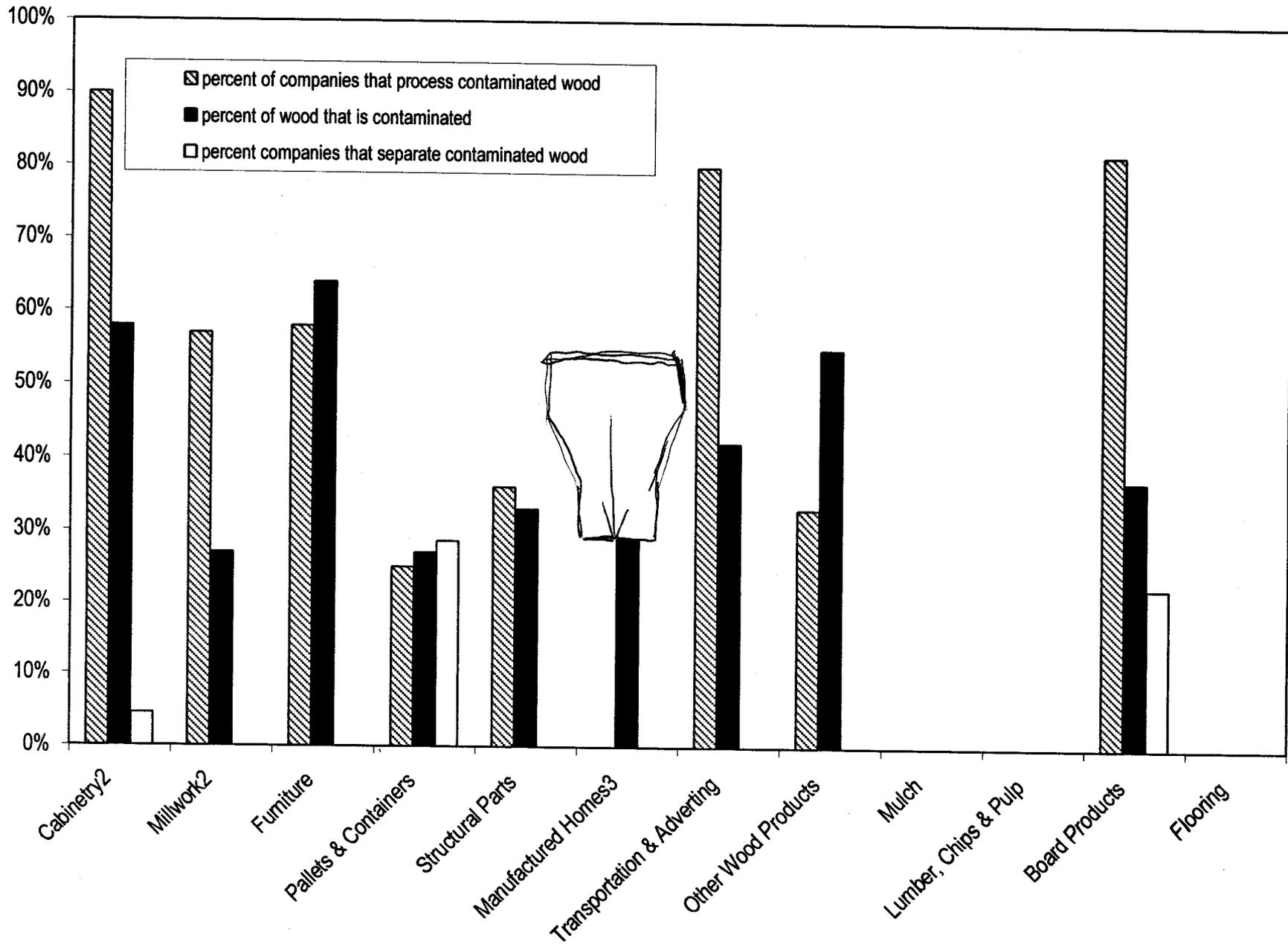
Wood from C&D waste

- Cabinets
- Composites
- Millends
- Pallets, shipping skids, and crating
- Lumber
- Particle board
- Plywood
- Siding
- Trees: limbs, brush, stumps, and tops
- Veneer
- Sawdust

Species Used by Manufactured Homes Companies Surveyed



Percent Contamination in Wood Residues of Surveyed Companies



Possible Contaminants in C&D Wood Residues

General (typical in C&D wastes)	General (typical in C&D wastes)	General (typical in C&D wastes)	Composition board resins (furniture, windows/doors, millwork, etc..)
Acetone	De-emulsifier for oil	Paint remover	Overlays: resins
Acetylene Gas	Diesel fuel	Paint strippers	
Adhesives	Diesel lube oil	Paint/lacquers	pigments
Ammonia	Etching agents	Particle board	Finishes: urethanes
Anti-freeze	Ethyl Alcohol	Pentachlorophenol	
Asphalt	Fiberglass, mineral wool	Polishes for metal floor	oils
Benzene	Foam insulation	Putty	alkyd resins
Bleaching Agents	Freon	Resins, epoxides	latex resins
Carbon Black	Gasoline	Sealers	Drying Agents cobalt
Carbon Dioxide (in cylinders)	Glues	Shellac	
Caulking, sealant agents	Greases	Solder flux	manganese
Caustic Soda (sodium hydroxide)	Helium (in cylinders)	Solder, lead	zinc
Chromate Salts	Hydraulic brake fluid	Solder, other	Pigments: lead
Chromium	Hydrochloric acid	Solvents	
Cleaning agents	Insulation (including asbestos)	Sulfuric acid	titanium
Coal tar pitch	Kerosene	Transite pipe	zinc
Coatings	Lime	Varnishes	iron
Cobalt	Lubricating oils	Waterproofing agents	cadmium
Concrete curing compounds	Lye	Wood preservatives	
Creosote	Methyl ethyl ketone		
Cutting oil	Motor Oil adhesives		

From: Smith, M.L. "Study of Processing and Utilizing Urban Wood Waste and Pallets for Fuel in the State of Wisconsin" 1995

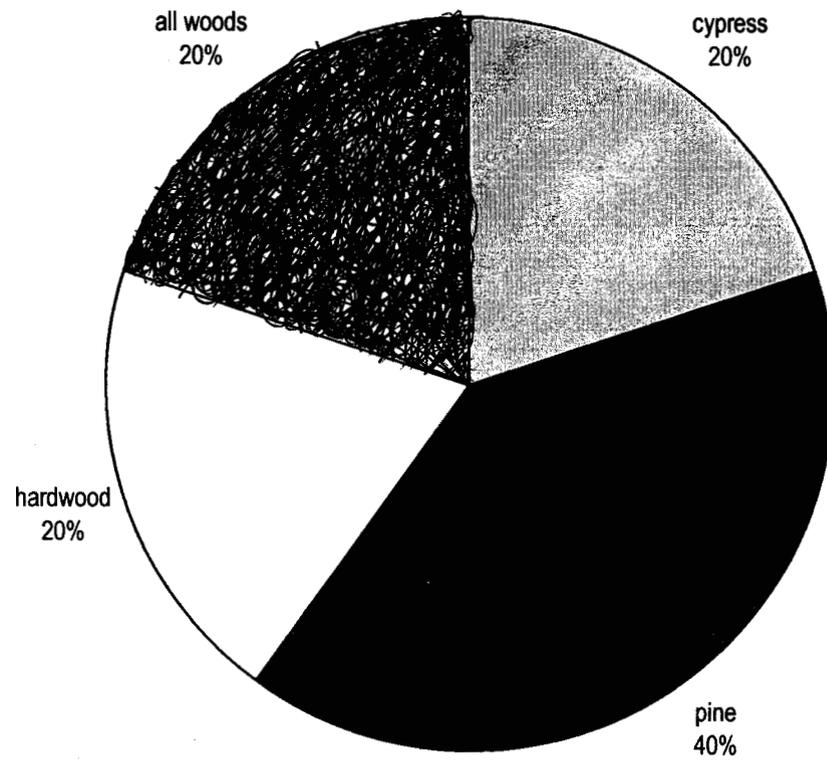
Basic Mulching Requirements

- Grind or Chip Wood (with little or no lag time)
- Covered Storage Facility

Usable Wood for Mulching

- Chipped or Grinded
- Fairly Clean
- Preferably untreated
- No laminates, glues, or resins

Species Used by Mulch Companies Surveyed



Uses of Mulch

- Landscaping
- Land Cover
- Erosion Control

Road Wood Material

Type and characteristics of desired wood depend on:

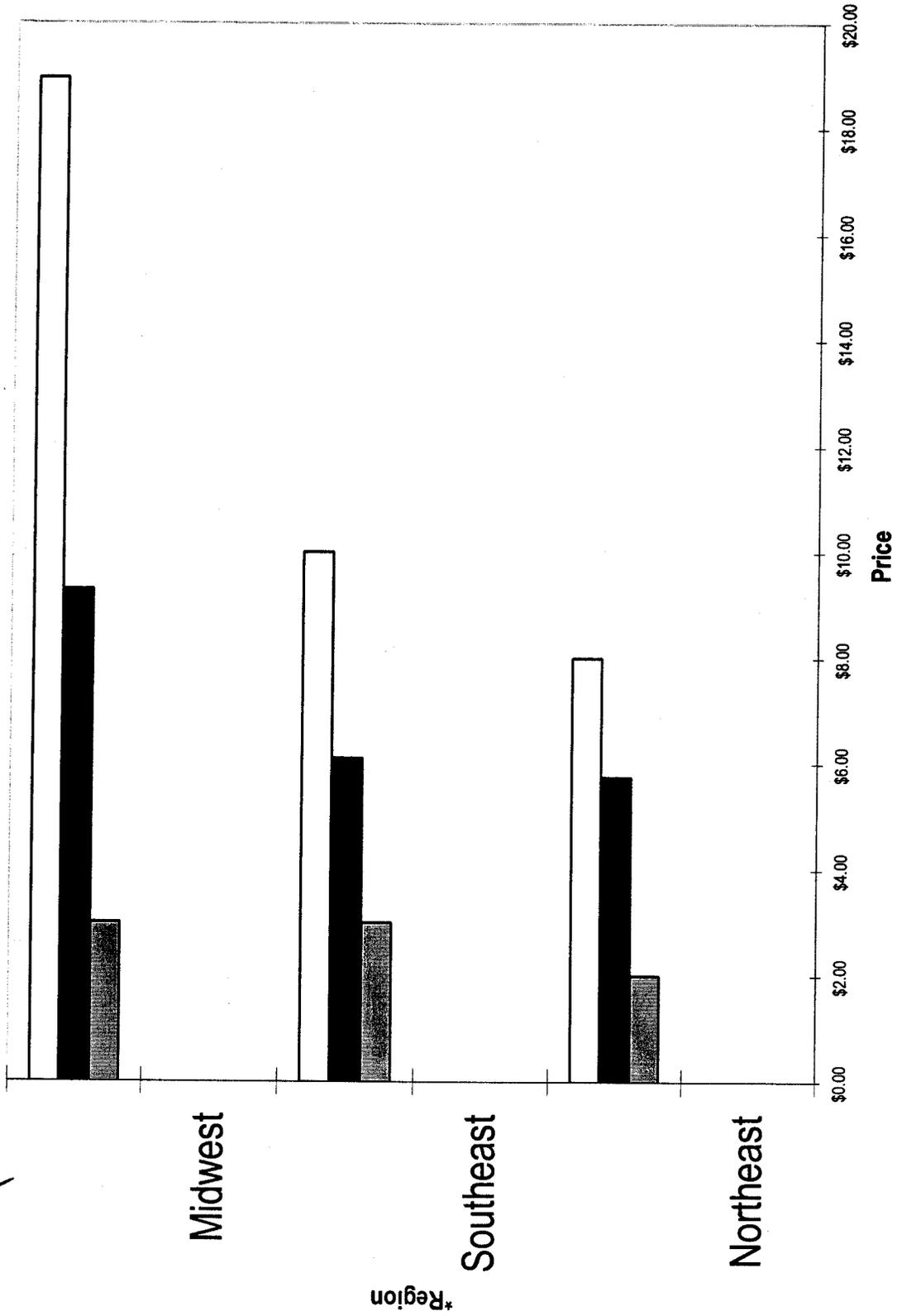
- Desired life of the road
- Anticipated traffic levels
- Types of vehicles
- Underlying soils and slopes

Developing a Market

- **In-house use**
- **Teamwork**
- **Nuggets or Shredded**
- **Bagged or Bulk**
- **Dyed or undyed Mulch**

Bulk Prices of Mulch in the U.S.

per cubic yard



*Southwest and Northwest regions omitted due to insufficient data

Animal Bedding

Requirements:

- Chipped wood waste
- Untreated, uncontaminated
- Lower quality than wood used in industrial operations

Important

Uses:

- Poultry
- Horse stables
- Dairy
- Swine

Benefits:

- Absorbent for animal waste
- No additional processing required

Further Information

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