

EXTENSION NOTES



MULCHES HELP TREES BEAT WEED COMPETITION

Mulches are an effective alternative to herbicides for protecting tree seedlings from competition with other plants for light, nutrients and moisture. Placed on the soil around the base of a tree seedling, they improve growth and survival by preventing other plants from germinating or growing.

Depending on their structure and the material they are made of, some mulches also help seedlings grow by increasing the temperature of the soil and holding that

heat during cool evenings. These mulches can also protect plants from extreme hot and cold temperatures.

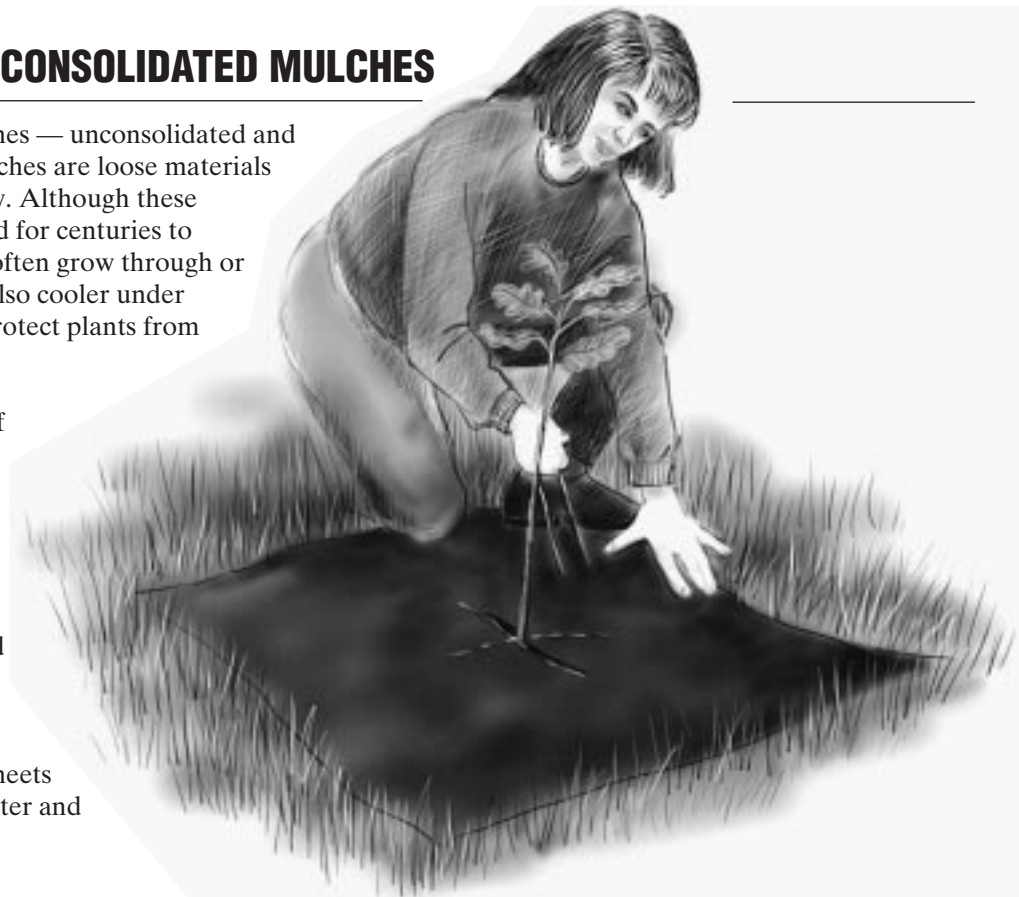
All mulches protect plants from dry conditions by trapping moisture beneath them. The most effective of these mulches also allow air to reach the soil so that excess water can evaporate.

This Extension Note provides information about the kinds of mulches that are available and how to use them effectively.

UNCONSOLIDATED AND CONSOLIDATED MULCHES

There are two basic kinds of mulches — unconsolidated and consolidated. Unconsolidated mulches are loose materials such as wood chips, bark and straw. Although these traditional mulches have been used for centuries to control weed competition, weeds often grow through or on them. The soil temperature is also cooler under loose materials, and they do not protect plants from extreme hot or cold temperatures.

Consolidated mulches are sheets of plastic or natural fibres that are laid on the ground and anchored with staples. They are more effective than traditional mulches in preventing the germination of plants that would compete with seedlings, and many are lighter and easier to apply. Plastic mulches have the added advantage of increasing and maintaining soil temperature. Many consolidated sheets are also designed to both retain water and allow excess water to evaporate.



FACTORS TO CONSIDER WHEN CHOOSING A MULCH

SIZE

Mulches should cover a minimum area of 90 x 90 centimetres around a tree.

LONGEVITY

Mulches should last until tree seedlings grow taller than the surrounding weeds — about three years for most tree species in southern Ontario. To reduce litter, plastic mulches should break down in sunlight and natural mulches should decay over this period.

EASE OF APPLICATION

Mulches should be easy to carry and quick to apply. Ideally, they should be applied when trees are first planted.

COST

Mulches are generally more expensive than herbicides. For example, three consecutive annual applications of the herbicide glyphosate cost in total about \$0.45 a tree (materials and labor), compared to \$0.74 a tree for the 90-centimetre Brush Blanket (materials only).

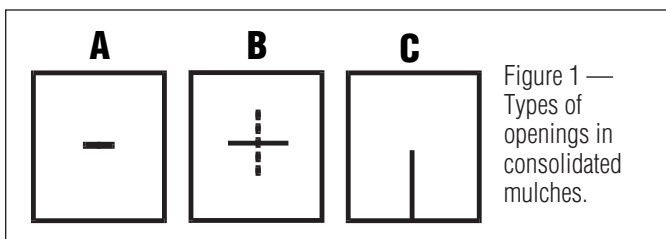


TABLE 1 — COMPARISON OF MULCHES

Type	Size (square centimetres)	Cost Per Tree ¹	Life Span	Centre Opening (Fig. 1)	Ease of Installation
Brush Blanket	60 x 60 90 x 90 120 x 120	\$0.31 \$0.60 \$1.01	Starts to break down in sunlight after five years	b	<ul style="list-style-type: none"> • Easy to apply • Lightweight dispenser boxes make it easy to carry 100 sheets of the 90-centimetre size or 50 sheets of the 120-centimetre size
Cellu Fib	70 90 100	\$0.34 \$0.46 \$0.58	Breaks down naturally in three to five years Not recommended for windy, exposed sites Shows signs of wear after first growing season	c	<ul style="list-style-type: none"> • Corners must be folded over before inserting staples • In areas where weed growth is severe, staple a small piece of Cellu Fib over the slit
Newspaper	Minimum of 90 x 90	Free	One year		<ul style="list-style-type: none"> • Must be replenished every year
Old Carpet	Cut to minimum of 90 x 100	Free	Two years or more?		<ul style="list-style-type: none"> • Place carpet upside down
Chips		Free	One year		<ul style="list-style-type: none"> • Must be replenished every year
Staples	10 cm (recommended on stony or shallow soils) 15 cm	From \$0.035 to \$0.05 each			<ul style="list-style-type: none"> • Standard across the industry • Push a staple through the mulch, then slightly squeeze the ends together while inserting them firmly into the ground

¹ includes cost of materials only — prices effective spring 1995

TYPES OF MULCHES

BRUSH BLANKET

The Brush Blanket is a consolidated mulch made of porous plastic. It prevents weeds from germinating by blocking sunlight. This mulch improves conditions for seedling growth by increasing and maintaining soil temperature. It also allows water to reach the soil and excess water to evaporate.

To apply, place the hole in the centre of the Brush Blanket over the tree seedling. If the hole is too small to fit over the seedling, enlarge the hole by tearing the perforated slit (Figure 1, diagram B). To reduce weed growth, use the smallest hole possible.

Pin the mulch to the ground with five staples. Insert the first staple in the centre of the mulch, then pull the corners tight and pin them down. Push the staple through the mulch and then slightly squeeze the staple ends together while inserting them firmly into the ground. The staples should be pushed into the mineral soil — the soil below the top layer of loose organic material. Rocks and sticks can be used to hold the sheet down along the edges. Don't use clumps of soil for this purpose.



A 120-centimetre Brush Blanket prevents weeds from competing with this two-year-old white pine (approximately 90 centimetres tall).

Brush Blanket

Supplier: Arbortec Industries Ltd.
Site 33, Comp 21
R.R.1
Penticton, B.C.
V2A 6J6
tel 1-800-561-9888
fax (604) 493-3666



Brush Blanket held in place by staples in corners and rocks (rocks are optional).

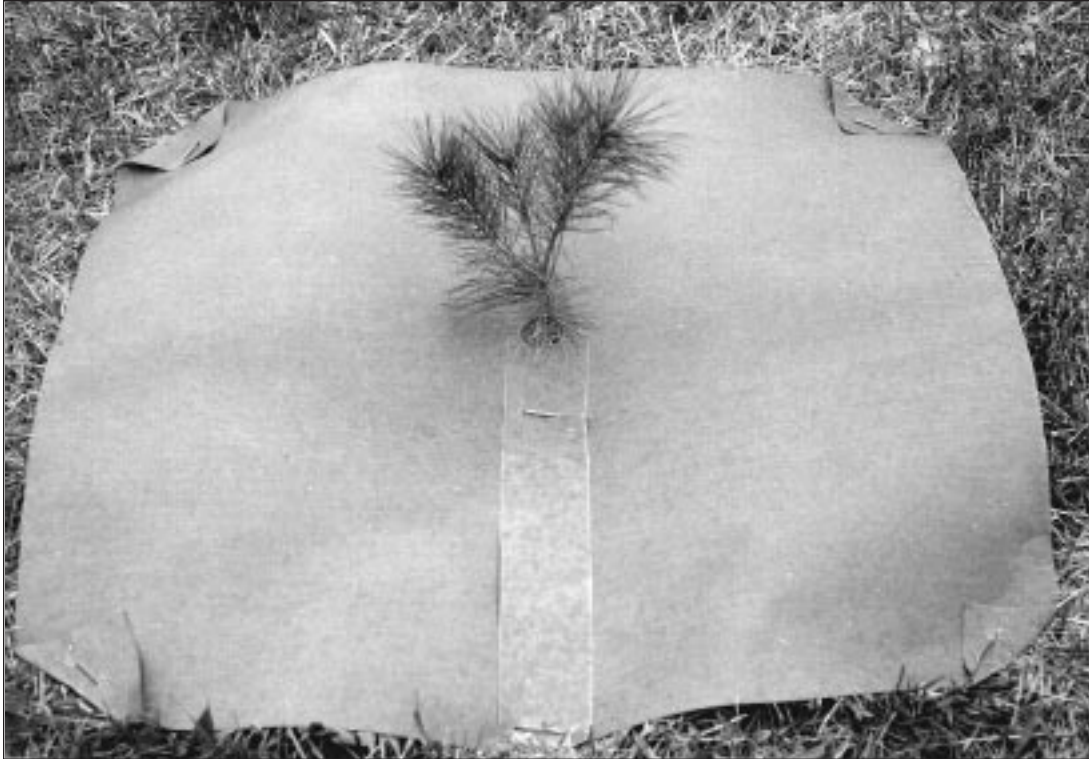
CELLU FIB

Cellu Fib is a consolidated mulch made of recycled paper coated with wax. This mulch prevents weeds from germinating by blocking sunlight. It does not increase or maintain soil temperature.

To apply, fold the corners over and pin the corners to the ground with staples. Push the staple through the folded

corner and then slightly squeeze the staple ends together while inserting firmly into the ground. To prevent weed growth in areas where weeds are a severe problem, staple a small piece of Cellu Fib over the slit.

Cellu Fib is not recommended for windy, exposed sites because the paper tears easily.



Cellu Fib, a consolidated mulch made of recycled paper coated with wax, applied according to the manufacturer's instructions.



After one growing season, Cellu Fib mulch is beginning to show signs of wear. For exposed old field sites, Cellu Fib may not provide weed control until trees are taller than surrounding weeds.

Cellu Fib®

Supplier: Cascades Multi-Pro Inc.
1 Place Ville-Marie
Bureau 3615
Montreal, Quebec
H3B 3P2
1-800-465-4160

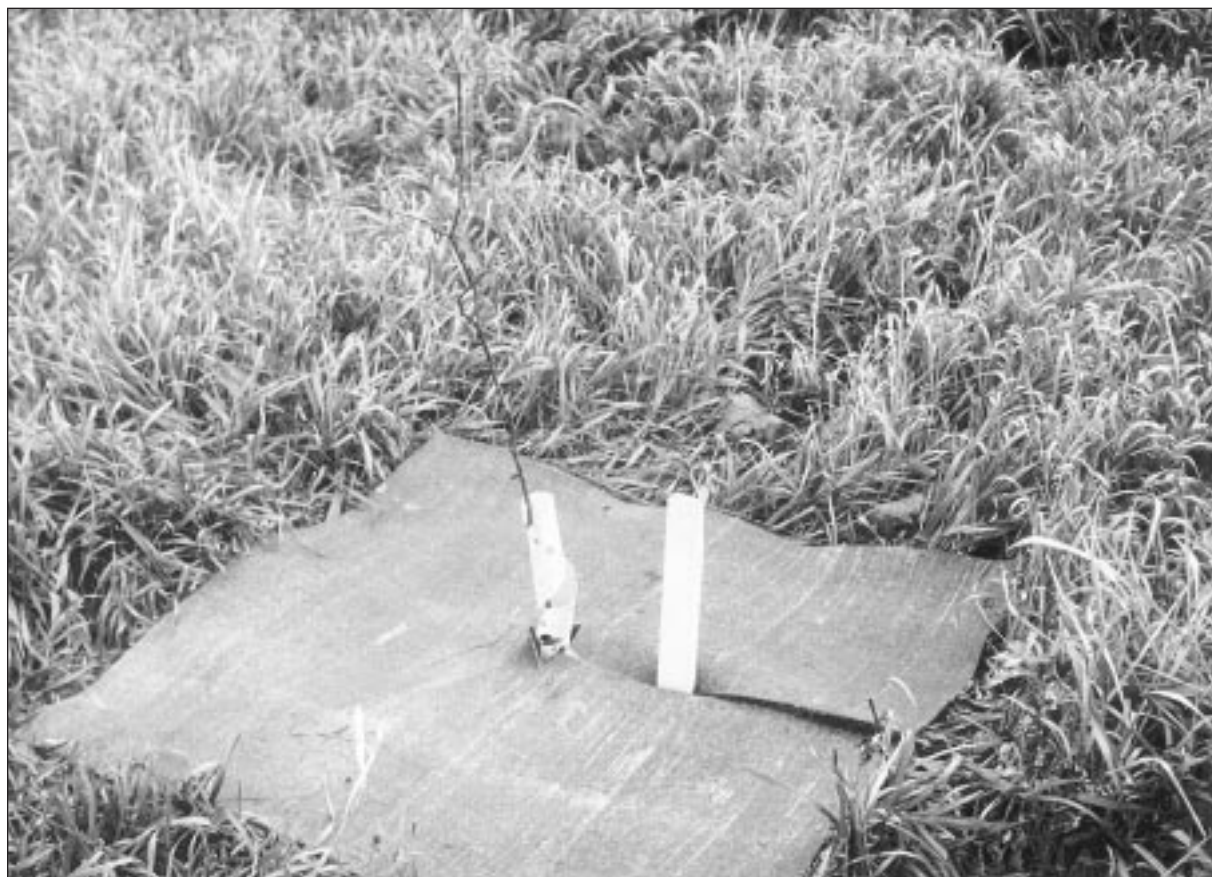
OLD CARPET

Pieces of old carpet make an effective and inexpensive mulch. They prevent weed growth by blocking sunlight and improve growth by maintaining soil moisture. They do not increase soil temperature. Old carpet can often be obtained at no cost from local waste disposal sites.

Old Carpet

Supplier: Local waste disposal sites

Cut the pieces with a utility knife to at least 90 x 90 centimetres. Cut a slit for the centre opening, as in Figure 1, diagram C. Place the carpet upside down around the tree.



Carpet mulch can provide effective and inexpensive weed control.

NEWSPAPER

Newspapers are an unconsolidated mulch. They prevent weed growth by blocking sunlight. Newspapers improve conditions for growth by maintaining soil moisture, but they do not increase soil temperature.

Newspapers are inexpensive and can often be obtained at no cost from recycling centres.

To apply, lay four sets of 10 to 16 overlapping sheets on the ground. Use debris or clumps of soil from the site to hold the newspapers down. Wet the newspapers so that they stick to the ground, or apply them when it is raining. Once wetted, newspapers won't easily blow away. It is easier to apply newspapers on rainy days. Newspapers are difficult to apply on windy days.

Newspapers last one or two seasons. For best results, they should be replenished every year.



Newspaper mulch must be replenished at the beginning of each new growing season for the first three years.



Newspaper

Supplier: Local recycling companies

Newspapers can often be obtained at no cost, but they are difficult to apply, especially on windy days.

WOOD CHIPS

Wood chips are an unconsolidated mulch. They prevent weed growth by blocking sunlight. They are one of the most popular mulches, and can sometimes be obtained at no cost. However, they do not improve growing conditions by raising or maintaining soil temperature. In fact, the soil temperature is generally cooler under a wood chip mulch than with no mulch at all. Wood chips improve growing conditions for seedlings by maintaining soil moisture.

To apply, lay wood chips to a depth of five to 10 centimetres over an area extending at least 50 centimetres from a tree. To reduce damage from mice and other rodents, keep the chips about 10 centimetres from the base of the tree.

If weed growth occurs, add more chips. However, do not exceed a depth of 10 centimetres. A deeper wood chip mulch will reduce root development and the amount of air getting to the soil.

When wood chips are used on soils that are low in nutrients, watch for pale, yellow-green leaves or needles on your seedlings — a sign of nitrogen deficiency caused by micro-organisms that decompose wood chips. If this occurs, treat the seedlings with a nitrogen-rich fertilizer or use a consolidated mulch.

Fresh wood chips should not be used until they have been allowed to age for six weeks.



Wood Chips

Suppliers: Townships
Local tree service companies

Woodchips are one of the most popular mulches. They should be applied each year.

TIPS FOR MULCH APPLICATION

1. Mow weeds before the trees are planted to suppress growth and to reduce habitat for mice and other rodents that might feed on the seedling.
2. Ensure that the mulch covers a minimum area of 90 x 90 centimetres around the tree.
3. Apply mulches early in the spring, immediately after seedlings are planted.
4. Follow the manufacturer's instructions for fastening mulches to the ground.
5. Before laying a mulch, clear away debris.
6. Lay consolidated mulches as flat as possible on the ground.
7. Inspect your trees every few months. Replace torn and ripped mulches. Replace newspaper mulches every year. Replenish wood chips to the correct depth, when required.

MULCH EVALUATION

The effectiveness of mulches as tools for reestablishing forests on abandoned agricultural land in southern Ontario is being evaluated by the Ministry of Natural Resources at test sites near Ridgetown, Cayuga, Midhurst, Prescott and Almonte. The field trials are being conducted through the Vegetation Management Alternatives Program and the Sustainable Forestry Initiative, which are developing safe and effective alternatives to herbicide spraying. Research has already shown that seedlings treated with Brush Blanket mulches grow as well as seedlings treated with the herbicide glyphosate and better than seedlings that received no weed control.

To view tree shelters, demonstration sites are located near the MNR's Chatham, Fonthill, Midhurst and Kemptonville office. Please call the office nearest you.

For more information contact:

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Manotick, Ontario K4M 1A5
Tel 613 692 2390 or 1 800 387 5304
Fax 613 692 2806
E-mail: lrc@sympatico.ca
Product Ordering: 1 888 571 INFO (4636)
Internet: <http://www3.sympatico.ca/lrc>

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