CROSS POLLINATION

Halton Master Gardeners Monthly Newsletter FEBRUARY 2024 | VOL. 17 ISSUE 1

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Balsam Fir—Abies balsamea

By Pam MacDonald, Halton Master Gardener

Balsam Fir (*Abies balsamea*) is one of Canada's most common and widespread trees. The only fir native to eastern Canada, it is a keystone species of the eastern North American boreal zone, providing shelter and food for an estimated 360 species of birds. These include songbirds, owls, eagles, and numerous waterfowl. Native insects, including two that infest balsam fir from time to time (the balsam fir sawfly and spruce budworm), are important food sources for migratory songbirds that breed in the boreal forests. In turn, the birds reduce the impact of these infestations on the trees. This is an example of how a healthy ecosystem keeps itself in balance. As well, porcupine eat the bark, and moose browse high-growing needles and twigs.

Indigenous Peoples traditionally used balsam fir (*zhingob* in Ojibwe) bark, twigs, needles, and resin to treat a wide variety of ailments including heart disease, rheumatism, kidney pain, colds, sore throat, headache, cough, and colic in infants. The oil was also used to good effect as an antiseptic on wounds.

Balsam fir is also an economically important species. Harvested from BC forests as a component of SPF (spruce/pine/fir) lumber, balsam fir is used extensively in the building industry for structural framing material. In Ontario, Quebec, and the Maritimes it is harvested not only for lumber but also pulp and paper. The resin has been used for turpentine, glue and varnish.

BALSAM FIR—ABIES BALSAMEA (CONT'D)

Appreciated for its narrow conical shape and aromatic needles that are slow to shed, it is a popular Christmas tree sold both domestically and around the world. Christmas tree farms have become an important enough agri-business in New Brunswick that the province adopted balsam fir as its official tree in May 1987.

In Ontario, balsam fir is most abundant in the boreal forests of the central and northern parts of the province and occurs on many sections of the Bruce Trail and conservation areas in Halton Hills. It is less abundant but not uncommon in the mixedwood plains of southern Ontario in company with maples, oaks, and other deciduous trees.



Unripe seed cones of this balsam fir are upright and dark grey. Cones exposed to more sunlight can appear more bluish. <u>Photo Source</u>: Rob Foster <u>CC BY 4.0</u>

This adaptable tree will grow in a variety of conditions but the preferred habitat includes moist, moderately acidic, sandy loam soil in locations with some protection from wind. As with many trees of the Canadian boreal forests, it has evolved shallow roots to cope with thin soils over bedrock. A seedling may start life in the shade of a forest canopy and survive several decades of shading by other trees. But once shade is removed it responds quickly and can grow to stately heights of 50 or 60 feet and 20 to 25 feet wide. This makes it a bit too large for most city gardens, but happily there are dwarf cultivars more suited to residential landscapes.



Abies balsamea is the only fir native to eastern Canada. Photo Source: bplant.org

Abies balsamea 'Nana' is a slow grower that will reach a mature height of about 50-60 cm (20-24 inches) and spread of 80-100 cm (32-39 inches). Smaller still is 'Piccolo' with a mature height of 40-50 cm (16-20 inches) and width of 60-70 cm (24-28 inches). The needles, similar to the species, are thick, aromatic,

and dark green with white bands on their undersides. The cones of 'Nana' stand upright from the branches and start out purple but may take on tones of red or blue. Both cultivars will grow best in slightly acidic, moist, well drained soils in full sun to part shade. Once established, little maintenance is required. They will retain their compact, rounded shape with minimal to no pruning, and will become somewhat drought tolerant.



Close up shows flat needles with green suction-cup bases typical of firs. Spruce needles are diamond shaped. Photo Source: Judy Gallagher <u>CC BY 4.0</u>

Learn More about Balsam Fir:

- <u>Guelph Arboretum</u>
- <u>Government of Ontario</u>
- <u>Zhingob in Ojibwe</u>
- <u>Nature Conservancy Canada</u>
- <u>New Brunswick Emblem</u>
- Balsam Fir bplant.org



<u>Official symbol of</u> <u>New Brunswick</u>

FEBRUARY GARDEN 'TO DO' LIST

By Claudette Sims, Halton Master Gardener

Winter Sowing – Start your native plant garden. Search for free seed libraries in your area-here's one for <u>Hamilton</u>. Read Halton MG Bev Wagar's excellent blog posts on<u>winter sowing of seeds</u>.

Attend a <u>Seedy Saturday/Sunday</u> event in your area. Check our "What's Growing On" page for more details.

Veggies – Consider starting some leafy greens indoors. Good choices include <u>microgreens</u>, <u>lettuce</u>, <u>dwarf kale</u>, <u>mesclun mix</u>. Read our "<u>Indoor Veggie Garden</u>" blog to learn how!

Find Seeds – Search for seeds by company name or name of the seed at the <u>Canadian</u> <u>Seed Catalogue Index</u> (CSCI).

Seed Starting – Use this <u>Seed Starting Date</u> <u>Calculator</u> to determine when to start your veggie seeds. Enter May 17th as our area frost free date. Wait for March before starting tomatoes.

Trees – <u>Black knot fungus</u> - Pruning cuts should be made in late winter (February or March) when temperatures are below freezing. This will prevent black knot fungus spores from infecting the pruning wound.

Pagoda Dogwood – Inspect pagoda dogwood for signs of <u>golden canker</u>. Healthy stems are brown/purple and diseased ones yellow to orange. Prune affected stems to slow the infection. If badly infected, cut the entire shrub to the ground. It will grow back

beautifully in spring.

Forget the groundhogswatch the countdown until spring <u>here</u>!



66 February is all about the seeds and planning for your 2024 garden!



- Pruning Winter is ideal for pruning out dead, damaged, diseased wood and to increase circulation by opening the shape of trees andshrubs: <u>blueberries</u> (late February/early March); <u>grapes</u> (before growth starts in March); f<u>ruit trees</u> (late winter to early spring).
- Houseplants Inspect for pests and treat as needed.
- Dormant plants/<u>bulbs</u> indoors Inspect cold stored bulbs or plants for rot or signs of disease. Spray lightly if dry or shriveled.
- Amaryllis Cut off spent flowers andstems. Allow leaves to grow in a sunny window; water only when the soil is nearly dry. Fertilize with a dilute organic fertilizer about once a month.
- Start planning your 2024 garden by sourcing plants in nurseries near you. Check out our unique <u>map of nurseries in Ontario</u>. Native plant nurseries are highlighted with green stars.
- NEW! Nurseries committed to <u>not</u> selling invasive plants have a red ♥.
- Buy flowers or a plant for someone you love February 14th!



NEW PLANTS FROM OLD—PROPAGATING PLANTS

Allyn Walsh, Halton Master Gardener

It is winter now, but gardeners are still busy indoors and this is a good time to be thinking about houseplant propagation. After all, who can resist getting more plants—especially for practically no cost! Early spring, when houseplants enter the growing period, is considered the best time for houseplant propagation, but badly overgrown plants may be rejuvenated any time.

Different plant varieties respond differently to various propagation techniques, so it is always best to investigate for each specific variety. The aim of this article is to get you thinking and planning by providing a brief overview of several simple techniques within the skill range of any gardener. While the focus here is on houseplants, these approaches are also used for outdoor plants, both perennial and annual.

Let's look at a few propagation methods to help you get new plants and rejuvenate old ones.

Root Division



Ceropegia woodii spp (string of hearts) Image: Allyn Walsh

This *Ceropegia woodii* spp (string of hearts) is becoming pot bound and can be divided. Note the arial tubers, which can also generate new plants. Any outdoor gardener is familiar with dividing the roots of a perennial, either to rejuvenate it or to obtain new plants. Pot-grown plants may need this as well since their roots are so confined. Plants are removed from their pots, the roots loosened by clean fingers, and then cut with a clean sharp knife, ensuring that each section includes healthy leaves, stems, and roots. The divisions are then repotted in fresh potting soil in a container of appropriate size, and voila! new plants from old. The new divisions need to be kept moist and in bright, indirect light to establish. Almost all bushy houseplants with multiple stems at the base can be successfully propagated this way. Examples include ferns, Aspidistra, Zamioculcas azmifolian (ZZ plant) amongst many others. Plants that produce offsets (baby plants arising spontaneously from the roots) will also do well; these include many succulents and Pilea species.

Stem Cuttings

This easy method was taught to many of us in elementary school because it is so fast and satisfying. A section with at least two nodes is cut from the main stem of a well hydrated plant and placed in water or rooting media. The growing tip of the stem is included, although more stem sections with nodes can provide additional cuttings.



A stem cutting from Epiptemnum aureus (golden pathos).

While it is fun to watch the roots grow in water, the eventual move into potting soil does stress the plant and extra attention may be required.

Roots will likely grow from the two bottom nodes as long as they are submerged in either water or rooting medium.

NEW PLANTS FROM OLD—PROPAGATING PLANTS (CONT'D)

The water must be changed several times a week and its level must never drop to expose the developing roots. A variety of rooting media can be used instead, including perlite, vermiculite, sand, and mixtures of the above. Although peat moss can be used, there are environmental consequences, and many prefer to avoid it. Cuttings can be dipped into rooting hormone, but that isn't absolutely necessary. Humidity is very important for all cuttings, and it is advisable to fashion a clear plastic dome to cover them as they root. A plastic bag works fine.

Plants should be moved to potting soil when the roots are about 2-3 cm in length, which usually takes about a month or two. A gentle tug on the stem will show resistance when there are roots present. To plant, use a stick or pencil to create space to insert the rooted cutting into the potting soil, then gently firm the soil around the cutting. As always, tender care of the newly potted plants is required while they establish. Plants commonly propagated by this method include *Coleus, Dracaena, Pilea, Tradescantia, and Philodendron*, amongst many others. Some woody houseplants can also be grown with this method as long as the stems are quite young and still soft (e.g. *Ficus, Fuchsia*).

Leaf Cuttings

This technique is very similar to stem cuttings, however the leaf blade and petiole are used to root a new plant. Cut off a firm healthy leaf, leaving 2-3 cm of petiole attached and insert in the rooting medium, with or without rooting hormone. The leaf cutting is treated the same way as described above for stem cuttings, but roots may form more quickly from stem cuttings than with this method.





A Crassula ovata (jade plant) leaf cutting generated new growth. Image: Allyn Walsh

Leaf Vein Cuttings

For leaf vein cuttings, the major veins on the underside of a leaf are cut, and the leaf placed and pinned to the rooting medium (hair pins or paper clips will serve). The petiole is not included. The process is then similar to the other cutting propagation methods described above. This method is commonly used for succulent, *Begonia*, and African violet species, amongst others.



A Begonia spp leaf has several veins cut and is then pinned to the rooting media Image: Allyn Walsh



NEW PLANTS FROM OLD—PROPAGATING PLANTS (CONT'D)

Layering

This method involves leaving a new plant still attached to the main plant while new roots are allowed to grow. The technique is well described below in the link when propagating stolons, runners, rhizomes, crowns, offsets and suckers: *Layering Propagation Methods*



Clematis virginiana (Virgin's Bower Clematis)

Rules of thumb:

- Propagate only healthy plants—don't try to replicate a favourite that is diseased or dying
- · Ensure tools are clean and sharp
- Humidity is key! And if rooting in water, keep it clean and fresh
- Bright indirect light is best with some warmth, but guard against scorched leaves and overheated plants
- Newly rooted plants are sensitive babies and require regular observation and care
- Be patient, be very patient

As you have been reading let's hope that you have been thinking about which houseplants you would like more of and that you will make propagation part of your early spring gardening activities!

One caveat—some plants fall under <u>Plant Breeder's</u> <u>Rights</u>, giving the holder exclusive control over propagation material. In Canada, these rights are directed primarily towards commercial food crops and plants which are being sold.

For Further Information:



Cheng, D. **The New Plant Parent**: Develop Your Green Thumb and Care for Your House-Plant Family. Abrams. 2019 March 19.

How to propagate plants at home - Tara NolanHorticulture News, House Plant PropagationHome Propagation of House PlantsPropagating House Plants





EXPLORING PEAT AND COIR—PART 1 BALANCING ENVIRONMENTAL CONSCIOUSNESS AND HORTICULTURAL BENEFITS IN GARDEN PRACTICES

Janet Mackey, Halton Master Gardener

Many gardeners routinely investigate improvements to their garden and gardening practices as each new growing season arrives. One of these may be soil amendments or soil products to be purchased and used to provide a more productive or healthy environment for growing plants. This article, along with the series that follows, will look at the make-up, function, and environmental considerations of some of the commonly used materials, beginning with peat (part 1) and coir (part 2).



Hudson Bay Lowlands "The Breathing Lands" Image: Josef MacLeod - CBC Ring of Fire

What is peat?

Peat is widely used in the landscaping, agriculture, and horticulture industries as a soil amendment. Because of its ability to help retain moisture and provide air space for healthy growing roots, it is added to garden soils to enhance the quality of challenging conditions such as heavy clay, sand, or nutrientdeficiencies. Its ability to improve drainage, along with being insect and weed-free, make peat a unique and valued material for gardeners.

Peat has also been used, and is still used in some regions (especially in northern Europe), as a fuel to heat homes.

Where does peat come from?

Peat is an organic material that forms in the acidic, waterlogged, and sterile conditions of peatlands (which include bogs, fens, mires, swamps, muskeg and marshes) located in mostly northern regions throughout the world. They formed more than 10,000 years ago in depressions left as glaciers moved across the land.



Sphagnum moss, along with sundews, are commonly found in peatlands (<u>image</u>).

There are vast areas of peatlands in the region of northern Ontario, especially in the area of the Hudson Bay Lowlands (see map next page). This land is the home of the Mushkegowuk people, a contraction of the word Mushkeg and Ininiwuk (*the people*). The name Mushkeg is a traditional Cree word describing the geological conditions of the area.

Mushkeg is a soil type that is only found in arctic and boreal areas. The soil is made of plants in various stages of decomposition. When plants die

> they become submerged where little oxygen is present and bacteria and fungi work more slowly. The surface water of the peatlands is strongly acidic, less than 4.7 pH in bogs, and in fens, 4.7 to 7 pH.

> Plants that exist in these regions include sphagnum peat moss, sedges, ericaceous shrubs, as well as trees such as larch and black spruce.

EXPLORING PEAT AND COIR (CONT'D)

How is peat harvested?

Despite changes to industry methods since 1933 when harvesting began in Quebec, peat extraction still affects ecosystems. It changes the landscape forever. Work at a new location begins with road building into the chosen site. Channels are dug to drain the bog to a suitable level for extraction of the peat. The vegetation is removed, including the top 3 to 4" of decaying peat. After the land dries out, vacuum trucks begin harvesting the peat beneath the organic layer.

Any company harvesting peat in Canada has to commit to remediate the land, once the peat resources have been exhausted.

What are the environmental considerations?

- Peatlands are diverse ecosystems with distinct and specialized plant and animal species that are adapted to the unique conditions.
- While only covering 3% of the Earth, peatlands store five times the carbon held in the Amazon forest
- Canada holds 25% of the peatlands in the world.
- The Hudson Bay Lowland is the second largest peatland in the world.
- Peatlands are part of the traditional territories of many Indigenous peoples who are deeply connected to these places for their social, community, cultural, and economic values. Indigenous peoples have navigated the rivers, wetlands, and marine regions since the land was inhabited.
- Peatland disturbance (for example, by wildfires, thawing permafrost, or human disturbance) increases the rate that carbon is released into the atmosphere. (Recently a region known as the "Ring of Fire" has been opened to international mining companies to investigate extracting precious metals. This activity may begin a series of events that forever change the peatlands. See "Inside the Battle over Ontario's Ring of Fire" and "What on Earth".)



Harvesting peat Image: Sungro Horticulture

 2024 marks the first year there will be a restriction of peat-based products in the U.K. with a complete ban implemented in 2030.

The peatlands in the Hudson Bay Lowlands contain an enormous amount of freshwater that supports a network of rivers and lakes, which in turn support highly specialized plant

and animal species.





 (left) Scientists use a specialized shovel to extract soil from the peatlands to measure the amount of carbon stored.
(above) Caribou are one of the mammals that can survive the harsh conditions (Image)



Peatlands In Canada - Image: Storymap - Visit this page to learn more

EXPLORING PEAT AND COIR (CONT'D)

Should I stop using peat in the garden?

This is obviously an individual's decision. Options for alternative materials for potting media are growing in popularity (see graph) although some, such as coir, may come with their own set of environmental and cultural issues.



Peat extraction and other intrusions into peatlands, including mining, forestry,

agriculture, and hydro development, are facing increasing scrutiny from government and environmentally-focused organizations. As a result, Canadian suppliers of peat products for the horticulture industry are actively working to restore previously mined peatlands to make their product more sustainable. While replacing the vegetative growth is a step in the right direction, the long term outcomes, benefits, and impacts may not be seen for many years.

"Long-term studies of horticultural peat extraction sites suggest careful restoration can shift these peatlands from carbon sources back to carbon sinks within two decades. However, the portion of peat carbon lost during extraction (typically the top 1 m or greater) and drainage is much greater than the peat carbon that may be recovered within

> 20 years of restoration." Ecological Society of America Journal Nov. 2021

Gardeners who use large amounts of peat (even in *triple mix*) to remediate soil, whether under turf or in garden beds, may want to reflect and research more sustainable solutions to improve plant growth. Leaf mold, cover crops, composted wood products, compost, and manure are options to look at.

Evolution of the use of different materials used in potting mix in Germany Image: Horticulturae: Peat Substitution in Horticulture

> If purchasing peat to fill containers or start seedlings, purchase from reputable Canadian suppliers and consider investigating how the company harvests and remediates the excavations.

Some company reports to review:

- <u>Canadian Sphagnum Peat Moss Association</u>
- Premier Tech Horticulture
- <u>Scott's</u>
- <u>Sun Grow</u>
- <u>More</u>

Here are some thoughts to consider from Linda Chalker-Scott of Washington State University on the value of peat-based products in horticulture.

> "It doesn't do anything that's crucial for plant life, otherwise there wouldn't be any plants except right around peat bogs." Peat moss makes <u>soil better able to absorb and hold</u> <u>water</u>, but it isn't required.

Look for Part 2 - 'Coir' in the March Issue

EXPLORING PEAT AND COIR (CONT'D)

Moving forward

If you want to start reducing your use of peat-based products, consider changing your practices over a period of a few years. Here are some suggestions:



1. Since seeds are more sensitive, stick to your usual trusted potting mix until you've explored and used some of the available peat

substitutes with hardier container plants first. Materials may be referred to as 'peat substitutes', but they will function differently. Here are some <u>seed-mix</u> <u>recipes</u> to check.



2. Avoid the use of peat when backfilling holes for trees and shrubs. Instead, use the local soil that was removed from the hole.

Add a layer of compost over the root zone as well as a few inches of wood chips. Do not let either material be in contact with the bark. Read "<u>How to Plant a</u> <u>Tree</u>"



3. Begin gathering fallen leaves next autumn and let them compost into leaf mould. Once complete, leaf mould can be used in some potting mixes as a substitute for peat. Learn how to make your own leaf mould.



4. Read labels of soil products or potting mixes so that you become aware of which ingredients are present. Check the origin of the product

and whether the company has reputable products.



5. Build your own compost system at home so that the finished product is readily available to improve soils or to add into a potting mix.

Further Information:

- <u>Coconut Coir vs. Peat Moss</u> Washington State University
- <u>How to Make Peat Free Potting Soil</u> Ninety % Native (YouTube).

Peat:

- <u>Canadian Spagnum Peat Moss Association</u>
- Gardening With Peat North Dakota State U.
- <u>The Land of the Mushkego</u>. Xavier Kataquapit. The Nation Archives. 2006
- <u>The Myth of Permanent Peatlands</u> L. Chalker Scott - Washington State U.
- Northern Peatlands in Canada
- Peat Substitution in Horticulture
- Peatlands International Peatland Society

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By Hariette Henry, Halton Master Gardener

Open-pollinated refers to seeds from plants that have been pollinated by natural means such as birds, insects, or wind. Because there are no restrictions in the flow of pollen between individual plants, open-pollinated varieties tend to be more genetically diverse. This diversity results in greater variation within plant populations, allowing them to slowly adapt to local growing conditions and climate changes.

As long as pollen is not shared between different varieties within the same species, the seed produced will remain true-to-type year after year. This enables gardeners to save their seed, and maybe save a little money as well.

Heirloom seeds are simply open-pollinated seeds that are deemed to have a historical or cultural significance. Not all open-pollinated seeds are heirlooms. There doesn't appear to be a specific definition for heirloom seeds, however some consider age to be a determining factor in their 'heirloom' designation (a variety that is more than fiftly years old for instance). Some smaller seed companies have found a niche in the market by exclusively selling heirloom seed varieties. Larger suppliers also offer them within their catalogues.

Hybrid seeds are created through a controlled method of pollination in which the pollen of two different species or varieties is crossed by human intervention. Based on desirable traits, breeders select specific male and female parent plants. By controlling the pollination, the resulting offspring will have identifiable genetic characteristics from both parents.

ee I plan to start growing plants from seed this year. Could you explain the differences and benefits of the various types of seeds such as: Open Pollinated, Heirloom, Hybrid, Certified Organic and GMO?



Image: H Henry

Not all hybrids produce superior results but often these cross-bred plants, identified as F1 in most seed catalogues, will have many desirable traits such as fast maturing, tolerance to various diseases and high pest resistance. The first generation of a hybridized cross also tend to grow better and produce higher yields than the parent plants due to a phenomenon called 'hybrid vigor'.

The downside is that hybrid plants will produce seeds that, if grown out beyond the first generation, tend to slide back to one or other of their parents' genetics which makes them unstable for seed saving. The additional effort in producing these seeds comes at a higher cost. Therefore, gardeners who use hybrids will need to purchase new seed every year.

The term 'GMO' refers to genetically modified organisms, where the modification is made on a cellular level in a laboratory. It is not legal to sell GMO gardening seeds to the general consumer in Canada. Only farmers and large commercial agencies can buy GMO seeds for commercial use. You might see GMO-free seeds available for sale in seed catalogues or elsewhere. This is simply a marketing tactic, as all home garden seeds are GMO free.

You might also notice in the catalogues seeds labeled as organic. This means that during production, while the seed crop is growing in the field, being harvested and processed, it is not exposed to any prohibited chemicals. These seed suppliers are certified organic by the CSI (Centre for Systems Integration, a division of the Canadian Seed Institute) and they are often identified in catalogues with a 'Canada Organic' label.



Garden Inspiration! Winter Wonders!



Image: Healthy Yards



Image: Nature in the City FB page

Animal Tracks		
Paintings by Erick Ingraham Tracks are not to scale.		
White Footed Mouse	<u> </u>	- e 4 - e 4
Long-tailed Weasel	(internet	
Common Porcupine	e	NG 93
Gray Squirrel	C	* *
Eastern Chipmunk	4	** ** **
Moose		
Black Bear		C in the
American Beaver	and the second second	
Gray Wolf	S	-
Lynx	MA	9. 9.
Striped Skunk	1	e * * * * *
White-tailed Deer	A.	\$° (*)
Red Fox		4 . 5 5
Red Squirrel		*** ***
Common Raccoon	10	the second
Snowshoe Hare	S	·• 0.0

Image: <u>Almanca.com</u>

Cross Pollination



By Trish Moraghan, Halton Master Gardener



Cross Pollination





Check our calendar for events



Low Maintenance Garden Boulevard Virtual Presentation on Sat. Feb. 10, 2024 10 AM to 11 AM

Learn more here



Explore, learn and be inspired.

About Our Newsletter

Cross Pollination is published monthly from February to December and is written and prepared by our dedicated volunteers. Halton Master Gardeners are experienced gardeners who have studied horticulture extensively and continue to upgrade their skills through technical training. We strive to provide science-based, sustainable gardening information to the general public. The information in our newsletter has been verified by our volunteers to the best of our abilities, but given the scope of horticulture and science some concepts may not reflect current knowledge. The content displayed in our newsletter is the intellectual property of Halton Region Master Gardeners and their authors. It can be shared in its entirety, but specific content should not be reused, republished or reprinted without the author's consent.

Copy Editor: Isabel Belanger

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