

# DIGGING IN

NOVA SCOTIA HORTICULTURE FOR HEALTH NETWORK

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The Nova Scotia Horticulture for Health Network is a coalition of people interested in supporting horticulture for health initiatives through resource-sharing, exchange of practices/knowledge, and networking.



## Horticultural Therapy Activity Plan – Sowing Seeds in Winter

Text by Zuzana Poláčková & Lesley Fleming, HTR

Photos by Z. Poláčková & Z. Schaeffer. Unsplash

This activity was developed and delivered for programs with survivors of trauma, including female survivors of human trafficking. It has been delivered as clinical horticultural therapy (HT) and as therapeutic horticulture (TH), the latter with therapeutic goals that were not clinically charted as they were in HT. The activity is appropriate across populations and can be adapted to focus on specific therapeutic goals of renewal, personal growth, passage of time, practicing patience, coping with life's unpredictability and unexpected outcomes. Its versatility as a winter-time plant activity for all types of

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**ACTIVITY DESCRIPTION:** Sowing seeds in winter months for renewal and emergence in upcoming season.

**THERAPEUTIC GOALS:**

**Emotional:** exploring sense of renewal & growth, focus on self-identity, self-care, well-being, life skills and needs, learning healthy ways of coping with emotions, practicing patience

**Physical:** eye-hand motor skills, maintaining hand dexterity, strength, & pincer grip

**Intellectual:** learning about vegetables, matching labels to seeds, cognitive practice of following sequential steps, discussing life's unpredictability, adversity, resiliency & unexpected outcomes

**Social:** group cooperative activity, teamwork, collaboration, socializing

climates including those with snow, underscores the theme of renewal, with the passage of plant dormancy being transformed and regenerated as a new season emerges. Plant and season metaphors and themes relating to human challenges including renewal and transformation are both abstract and literal, understandable by all ages and cognitive/intellectual abilities.

## STEP-BY-STEP PROCESS:

1. Prep: pre-wash & dry all recycled milk containers before session begins.
2. Create a suitable growing medium for planting or have potting mix ready for session.
3. Participants, where appropriate, prepare the milk container by cutting it almost in half, opening it so that the two parts (top & bottom) are not completely detached.
4. Fill containers with soil halfway up the bottom part of container & gently press the soil.
5. Leader gives directions re planting the seeds, referring to planting depth (on seed packet). Seed types – rye grass, radish, cabbage, kale, onion, leek, broccoli, beetroot, kohlrabi. Cover with a thin layer of soil, gently compacting it.
6. Gently water the containers so as not to disturb seeds. Use masking or duct tape to seal the two parts together at the cut line.
7. Pierce 5 holes in the top half of container to create airflow and provide optimal moisture (pierce with nail, awl, or scissors).
8. Label containers with participant's name, planting date & plant name. Read seed packet to determine days to germination.
9. Place container outside including winter season, and plan schedule for observing plant germination, growth, with possible activity extension of transplanting seeds when mature.
10. Discuss elements required for seed survival (winter temperatures, sun, water), care of seeds, passage of time & patience during germination stage, expectations for plant emergence, seasons - life cycles of planting, germination, renewal, growth & harvest. Relate these to human growth.

### Materials

Recycled milk containers  
Soil, potting mix  
Seeds  
Marker, nail, knife

**THERAPEUTIC APPLICATION:** This activity lends itself to therapeutic goals in all health domains. In particular, themes & metaphors related to renewal, hope, growth, care & self-care. Using different types of seeds, identifying their specific needs, and recognizing the powerlessness of seeds relative to weather conditions & other inputs can lead to discussions/metaphors for human growth, overcoming adversity & trauma, cycles of darkness followed by blossoms/growth (plant & human), sense of self & coping strategies for dealing with situations and emotions participants may have experienced.

**APPLICATIONS FOR POPULATIONS:** This activity can be delivered as a one-time or multi-session activity, the latter including observations of plant cycles, perhaps most effective when seed growth is apparent as mature, viable plants. It is appropriate for most populations, and for both individuals and groups. Tasks can be supervised so that all levels of intellectual abilities can participate.

**SAFETY CONSIDERATIONS:** Essential to check with staff and individuals before the activity to identify allergies, physical abilities, or emotional (in)stability. The use of sharp knives may not be appropriate for some populations. The option of leader doing this step during or prior to session will minimize safety challenges. Sharp objects may need to be secured and out of reach of participants.

**NOTES OR OTHER CONSIDERATIONS:** Knowledge of trauma or human trafficking survivor populations would be helpful, or sessions delivered in conjunction with “expert” in these fields (social worker, mental health professional). Other containers may be used where recycled plastic milk containers are not available. Creating the sealed “greenhouse” effect for condensation/watering of seeds is essential.

This activity provides for the integration of garden elements which are often missing during long winter months, with opportunities for participants to plan gardens, think about dreams, experience hope & joy at plant growth as a path to healing & recovery. Activity can integrate elements of food production, ethnobotany, and connections to reality through natural cycles (seasons, growth, rest).

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## Horticultural Therapy with Female Survivors of Human Trafficking

By Zuzana Poláčková

Photos by N. Jovanovic, H. Rivera.Unsplash & J. Fleming



Female survivors of human trafficking face many health challenges physically, emotionally, socially, spiritually, and behaviourally. Many have experienced substance abuse and sexual abuse related to human trafficking. Horticultural therapy (HT) is now being used to address these co-occurring health challenges to begin a path to recovery and healing from trauma. It has been described as the bridge from despair to hope and healing. HT is a recognized therapeutic modality using plant-based activity in a therapeutic process to achieve specific and documented health outcomes.

[Human trafficking and sexual abuse](#) are growing issues in society. Physical or sexual violence is a public health problem that affects more than one-third of all women globally (London School of Hygiene & Tropical Medicine, 2018; Coverdale et al., 2020; De Shalit et al., 2020). Over 50% of women have experienced sexual violence involving physical contact during their lifetime, and one in four women has experienced rape or attempted rape (CDC, 2022).

Research in the *Journal of Human Trafficking* and other publications continue to tease out [health challenges faced by victims and survivors of human trafficking](#) (Altun et al., 2017; Vellani & Kristof, 2021). A [systematic review found that human trafficking](#) is associated with high levels of physical and sexual violence prior to and during trafficking (Hemmings et al., 2016; [Stöckl et al., 2021](#); Ramaj, 2021). Many survivors experience physical and sexual abuse from partners, family members and other perpetrators even after escaping the exploitation (Ottisova et al., 2016). Over three-quarters reported abuse in childhood, one-quarter of sexual abuse, and two-quarters of physical and emotional abuse prior to trafficking (Coverdale et al., 2020). Research published in 2022 suggests that there is a link between female victims of trafficking and intellectual disabilities, with this group more often involved in commercial sexual exploitation (Jago et al., 2022). Human trafficking preys on vulnerabilities—marginalization, employment instability and economic insecurity (Jago et al., 2022; ICAT, 2022; ATEST, 2021).

Health issues prevalent in trafficking victims include substance abuse, sexually transmitted disease, pelvic pain, rectal trauma and urinary difficulties, as well as lack of self-worth, depression, stress-related disorders, confusion, disorientation, denial, shame, helplessness, disbelief, grief, PTSD, suicidal ideations and nervous system dysregulation (Jagoe et al., 2022; Hemmings et al., 2016; Coverdale et al., 2020; DHHS, nd.; Vellani & Kristof, 2023; Altun et al., 2017). Trauma, both psychological and physical, is prevalent in this population, which impacts their perception of the world. Feelings of intense fear, helplessness, horror, anger, and uncontrollable mood swings are evident, exhibited by self-regulation dysfunction, impaired neural response flexibility, distorted coping mechanisms and unhealthy behavioural patterns (SAMHSA, 2014; Reid et al., 2020; [Casassa et al., 2021](#); Van der Kolk, 2000; [Okech et al., 2018](#)).

[Therapeutic interventions that incorporate trauma-informed](#) and recovery care, along with survivor-centred theory are being used with survivors of human trafficking (Gordon et al., 2018; Coverdale et al., 2020). Horticultural therapy is one such intervention. It is able to integrate these approaches into the horticulture-based modality.



Research and evidence-based practice have validated the benefits of HT. Specific research on female survivors of human trafficking and HT is limited.

Research by [Chen \(2021\)](#), Silvia-Rodriguez Bonazzi et al. (2022), and [Branco \(2022\)](#) provide insights into trauma and trafficking. Some health challenges and health outcomes experienced by other populations may be pertinent to survivors of human trafficking and inform their HT treatment:

- reduced stress and psychiatric symptoms; stabilized mood and increased sense of tranquillity, spirituality, and enjoyment (Shao et al., 2020; Olszewska-Guzzo et al., 2022; Ulrich et al., 1991; Cipriani et al., 2022)
- increased self-efficacy and self-esteem, reduction in mental dysfunction (Park, 2021; Wiesinger et al., 2006)
- development of group cohesiveness and a sense of belonging (Diamant et al., 2010)
- development of sustainable vocational skills for clients (Silvia-Rodriguez Bonazzi & Febles, 2022)
- strategies to cope with trauma (Wise, 2019; Silvia-Rodriguez Bonazzi et al., 2022)

Horticultural therapy programs led by trained professionals have been able to alleviate anger, aggression, depression, and other negative feelings across populations. Health improvements related to behavioural and social interactions—social inclusion and social isolation—challenges for human trafficking victims and other populations, have been documented in HT services (Okech et al., 2018; Bahamonde, 2019). Therapeutic activities like pruning, [smashing pots and putting them back together](#), digging, mixing soil, raking, or seed germination, along with therapeutic techniques involving

reflection, mindfulness, meditation and connection with truth and nature, are used in HT, the latter important for spiritual and emotional health improvements for survivors of human trafficking and other populations.

Physical health challenges, a hallmark of this (and other) population(s), are being treated by a variety of interventions including HT. Horticultural therapy activities can help clients improve physical coordination including proprioception, increase physical exercise, increase exposure to sunlight and Vitamin D (essential for circadian rhythm related to balanced sleeping patterns), the latter vital in recovery and healing processes per research on addiction recovery (TRWH, 2023). Research has established that 20-minute gardening activities with low to moderate intensity can help increase the production of two main brain proteins BDNF and PDGF, critical for healthy brain functioning (Park et al., 2019; Tu & Chiu, 2020).

## **Horticultural Therapy with Female Survivors of Human Trafficking**

Horticultural therapy programs at a facility in Kenya, *Community Gardens* in the UK, and a recovery home in Canada were developed and delivered for vulnerable populations of individuals with substance abuse, domestic violence, and sexual abuse problems. In each of the groups, unreported female survivors of human trafficking were identified. Of note—survivors did not or would not always recognize their situation. Each of these programs focused on identifying needs and variabilities specific to, and suitable for female survivors. One of the programs used a clinical HT treatment modality. The other two were delivered as therapeutic horticulture, a less formalized health intervention.



The HT programming used the therapeutic process - identifying health challenges and goals, selecting hands-on horticultural activities, and measuring outcomes, within the context of creating new opportunities for trauma healing (LaRocque, 2019). Mindfulness, guided visualization, and metanarrative—storytelling techniques were incorporated into HT sessions, informed by Kaplans' attention restoration theory (Kaplan & Kaplan, 1989).

The metanarrative technique was particularly effective with female victims of human trafficking. Using storytelling within HT sessions, discussing fictional figures, gardens and situations, provided allegories for real-life experiences, re-enforcing an overarching account or interpretation of events. This provided a pattern or structure for participants' beliefs, giving meaning to their experiences. The three HT programs mentioned used a framework of four historical and anecdotal gardens. Metanarratives helped to make the connection between the individual's personal journey with others in the group who had experienced similar violence. Sharing their stories supported the development of coping tools where their own reality was interpreted in a new way. The HT modality provided a non-threatening and plant-based medium in support of healing.

Further research and use of HT with female survivors of human trafficking will provide evidence-based practices which may be applicable to survivors of human trafficking from all genders, ages, and geographic locations.



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## Garden Engagement

Text & photos by Lesley Fleming, HTR



Gardens are more than just green oases of beauty. They offer all types of engagement. Some engagement is passive, like looking at flowers, while others are active - walking in a garden, planting bulbs or mowing the lawn. Engagement, a term and therapeutic technique used by horticultural therapists, is the process of creating a connection (Chowdhury, 2019). It also refers to how a garden visitor experiences the plant-rich environment, not as a client of therapy but rather as a leisure activity. Thinking about time in a garden either from the perspective of a therapist or as a garden enthusiast, exploring how engagement or connection in a garden occurs sheds light on the joys and interactions between people and plants, and how gardens heighten an individual's senses and connections to the natural world.

Engagement in gardens (and other settings) involves one or more of the senses - hearing, seeing, touching, tasting or smelling. Lesser known human senses—*proprioception* body awareness (how your body orients itself to the world around it - knowing where body parts are without having to look at them ie. holding a pencil, or coordination between body parts like hand-eye coordination) (Pathways, 2023), *vestibular sense* (of balance) and interoception, internal signals within your body like hunger or itchy skin (Barker et al., 2021) can also be activated in gardens (Fleming & Grimes, 20xx).

Gardens can offer a range of sensory interactions, experiences and engagement. What have been your experiences visiting a garden? Were they pleasant, memorable or awe-inspiring?

Gardens can provide a therapeutic setting where client connection and engagement can be explored. These examples may provide some ideas for garden installations, for engaging clients in garden settings, or for personal recreation.

# Nova Scotia Horticulture for Health Network

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Viewing botanical-inspired art. Ringing bells or musical instruments. Interactive (moveable) signage with garden or plant information. Climbing a treehouse, play structure or swinging bridge. Doing reflexology on a garden path. Intellectual stimulation pondering an insect hotel or other intriguing concepts. Planting, touching or eating produce from an edible garden. Walking in a garden experiencing plants, built structures, weather, smells, other people, or special events. Photos from [Selby Botanical Gardens](#), Sarasota, FL., Atlanta Botanical Gardens, GA., [Desert Botanical Gardens](#), Phoenix, AR., Ringling Museum (gardens), Sarasota, FL. and [Nova Southeastern University medicinal gardens](#) reflexology path, Fort Lauderdale, FL. provide inspiration.



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## Horticulture Terms A – Z: 2023 Version

By Lesley Fleming, HTR & Susan Morgan, MS

In a twist on the annual [Horticulture Terms A – Z](#) article, the 2023 version is focused on plant names. Most of the examples are common names or cultivar names, with the botanical name in parentheses.



**A**rizona poppy (*Kallstroemia grandiflora*) photo left. Fun fact: Arizona poppy is a “faux poppy.” Although it bears a strong resemblance to the California poppy (*Escholtzia californica*), it has no relation to it and is not technically a poppy.

**B**luestar (*Amsonia tabernaemontana*)

**C**ulver’s root ([Veronicastrum virginicum](#))



**D**rumstick (*Craspedia globosa*; also *Pycnosorus globosus*) second photo from top. Fun fact: Native to Australia, these mini tennis ball flowers are great to use in fresh and dried floral arrangements.

**E**uphorbia pulcherrima ‘Lemon Snow’

**F**leeceflower (*Persicaria affinis*)

**G**oat’s beard (*Aruncus dioicus*)



**H**akone grass ([Hakonechloa macra](#))

**I**ce plant (*Delosperma*) third photo from top. Fun fact: A succulent groundcover that forms a mat of flowers when it blooms.

**J**apanese Skimmia (*Skimmia japonica*)



**K**angaroo Paw (*Anigozanthus ‘Kanga Yellow’*)

**L**ove-in-a-Mist (*Nigella damascena ‘Persian Jewels’*) fourth photo from top.

**M**illion bells (*Calibrachoa*)

**N**ew Zealand wind grass (*Anemanthele lessoniana*)



**O**sage orange ([Maclura pomifera](#)). Fun fact: Not a type of citrus – it is in the mulberry family with softball-sized fruit considered inedible.

**P**rairie smoke (*Geum triflorum*). Fun fact: Prairie smoke is valued for its interesting fluffy seedheads that form after it has finished blooming.

**Q**ueen Anne’s Lace (*Daucus carota*)

**R**ocky Mountain bee plant (*Cleome serrulata*) photo purple flower.



**S**ticks on fire (*Euphorbia tirucalli*)

**T**idy tips ([Layia platyglossa](#))

**U**pright Prairie coneflower (*Ratibida columnifera*) photo yellow flowers.

**V**elvet plant ([Gynura aurantiaca](#))

**W**afer Stinking Ash (*Ptelea trifoliata*) photo light green leaves.



**X**anthosoma ‘Lime Zinger’. Fun fact: It’s an elephant ear with bright lime green leaves.

**Y**ulan magnolia (*Magnolia denudata*)

**Z**ebra plant (*Aphelandra squarrosa*) striped leaves photo. Fun fact: In its native tropical environment in Brazil, zebra plant is a shrub that can grow to 6’ tall.



Authors Lesley Fleming, HTR and Susan Morgan, MS were inspired by macro photos of flowers in photographer Ron Van Dongen’s book *A Bloom A Day A Fortune-Telling BIRTHDAY BOOK* (2009 Chronicle Books) and *The American Gardener Magazine* (American Horticultural Society) September/December 2022 issue. Photo credits: Arizona Native Plant Society-poppy, High Mowing Seeds.com-drumstick, BuyRareSeeds-Wafer stinking ash, Stamenandstem.com-zebra plant & Susan Morgan-ice plant, bee plant, love in a mist & upright Prairie coneflower.

## Embracing Nature: Tips for Establishing a Wildlife Garden in Fall

Text & photos by Tim Mason

Fall is a season that seems to hold a stronger reverence than the others; mingling the memories of a summer savoured, the anxious anticipation of a winter looming, while enjoying the present rewards of the harvest and another growing season coming to fruition.

An additional reason for wildlife gardeners to enjoy Fall is an extra excuse to do minimum work resulting in maximum benefit for our garden-dwelling neighbours! Involving the 3 key elements of food, shelter, and water in your garden will provide habitat and subsistence for a wide variety of temporary visitors and permanent residents throughout Fall.

### Shelter

#### ● Leave the leaves

The colours changing on deciduous trees are beautiful to behold - even the Canadian flag bears the [autumnal foliage of the Maple](#). The fallen leaves are also the perfect habitat for insects and small wildlife to seek shelter during inclement weather over the months ahead - raking leaves into large piles or collecting on garden beds will provide warmer microclimates and offer a cheap compost for next season.

#### ● Wait 'til Winter wanes

For those who have seen through the full season of letting their lawn naturalize, now is the time to cut back (if desired) the height of your meadow. Reducing the height by approximately 30% will direct energy back into the root system in the aim of a strong growth the following season. Remaining above-ground growth can be removed next Spring.

#### ● Empty nesters

Though Spring is far away, nesting boxes are an excellent way to invite birds into garden spaces. Migratory birds will notice these places for next year, local birds will use these during periods of bad weather all year round. Position nesting boxes in areas that will be free of unwanted exposure to the elements - this may take several iterations as the unpredictability of nature will dictate the final location of nesting boxes.

### Food & Water

#### ● Water options

Fall is a perfect time to inspect water sources for cleanliness. Dropped leaves can quickly rot and clog birdbaths and ponds, creating unhealthy pools of stagnant water. A weekly check to ensure local wildlife is satisfied and pond pumps free of blockages.



- **Autumn interest**

It can be tempting to cut down tall perennials and grasses that have finished blooming, in an attempt to keep the landscape neat and tidy. Resist the urge and enjoy the seasonal changes - the foliage, flowers, and seeds will provide sustenance for wildlife well into next year and a preferable view to an empty landscape.

- **Plan your plantings**

Planting in Fall is ideal for several species, notably trees and flowering bulbs. Planning now for next season will create a beneficial platform to grow into the new year. Some simple solutions are seed saving, or many garden stores offer heavily discounted perennial stock that have passed their 'market appeal' for sale. Timely plantings allow for sufficient growth without threat of impending frost.

## **Plants**

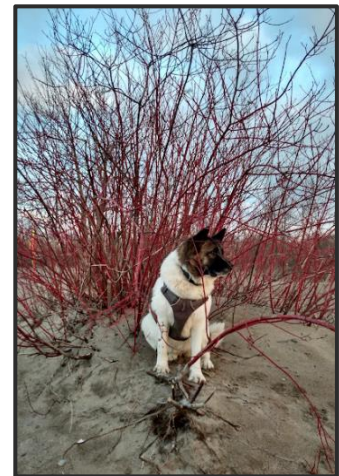
- **Late Bloomers: Goldenrod & New England Asters**

(*Solidago canadensis* & *Symphyotrichum novae-angliae*)

These [North American native wildflowers](#) bloom deep into Fall, through October into November. Many bee and butterfly species benefit from the nectar within, the contrasting colours and textures of the flowers complement each other beautifully for a striking visual display.

- **Red Osier Dogwood** (*Cornus sericea*)

This hardy deciduous shrub (photo top right) grows to a height of 7-10 feet tall, spreading by suckers. The stems turn a bright red through Fall into winter, a spectacular sight after a snowfall. Wildlife of all shapes and sizes use this plant - moths & butterflies, shorebirds, through to squirrels or deer who will graze on dogwoods all year round.



- **ID your Invasives: Wild Rose & Queen Annes Lace**

(*Rosa multiflora* & *Daucus Carota*)

Allowing lawn areas to naturalise will uncover the unwanted invasives that may be lurking beneath the surface, where sabotage and subterfuge are common tactics. Wild Rose (photo right) can be easily underestimated with its small soft white blooms, but quickly forms a prickly thicket given the opportunity. [Queen Anne's Lace](#) (photo far right) does its best to blend in with the extremely useful Yarrow (*Achillea Millefolium*), but a trained eye can quickly spot the difference and remove the offenders, roots and all.



Fall is a pivotal time to enjoy the fruits of labours, learn from mistakes, and design dreams for the future. Creating welcoming environments for wildlife keeps a strong connection to growing spaces through the following months when landscapes can appear to be fallow, though watching carefully will reveal they're anything but 'inactive'. Observe how nature interacts and grows with your space - remember 'If nothing is living in your garden, then your garden is not living!'

# Nova Scotia Horticulture for Health Network

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*Tim Mason's series on wildlife gardens for Digging In epublication has been wildly received, with many ideas implemented by gardeners within and beyond Nova Scotia. His deep love for nature has influenced his writing, his own garden and the design and garden work he does professionally. Originally from Australia, Tim now resides in Halifax, Nova Scotia.*





## Resources Fall 2023



Gardens in Nova Scotia offer a range of experiences throughout the province. *Nova Scotia Canada*, the official site for tourism lists [top gardens](#) which can be identified online by regions.

[Annapolis Royal Historic Gardens](#) 17 acres has multiple gardens including the largest rose collection in Eastern Canada.

[Bicentennial Botanical Gardens](#) in Bible Hill, Bay of Fundy - Annapolis Valley area, is located on 60 hectares of Agricultural Campus Dalhousie University. Themed gardens & a 2 km walking trail display plant collections, dwarf conifers, alpine & saxatile plants.

[Carmichael-Stewart House Museum & gardens](#) in New Glasgow, Northumberland Shore is an 1880 Victorian-style house with historical garden & tea on Tuesdays.

*To Do Canada* website lists [15 Amazing Gardens to Visit in Nova Scotia](#) including Tangled Garden (Grand Pre), Kejimikujik National Park & National Historic Site Maitland Bridge (walking trails, Mi-kmaq waterways, butterfly gardens), Pine Grove Park in Milton with native flora partridgeberry, *Ionicera Canadensis* & lady's slippers, & [Prescott House Museum Garden's](#) many varieties of apples.

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Active and Passive Engagement with Plants: Incorporating Interoception, Proprioception & Vestibular Senses for Therapeutic Outcomes

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We would like to acknowledge Nova Scotia is traditional territory of the Mi'kmaq people.