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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.

CONTENTS

Photo top right: C. Ellis

Horticulture for Health: 2025 Updates

Text by Lesley Fleming, HTR
Photos by L. Fleming & Greenhouse Grower

The concept of horticulture for health recognizes that horticulture in many capacities is positively impacting human health through horticulture-focused activity, programs, organizations and trends. Using a framework to identify and organize where the impacts are occurring brings a broad scope and understanding of how such horticultural activity can influence health (Fleming, 2021). The variety of initiatives included in the horticulture for health concept continues to expand its scope.

The horticulture for health framework was defined in a 2021 paper published in *Acta Horticulturae* journal and a presentation at a 2021 conference jointly hosted by the International Society of Horticultural Sciences, the International People-Plant Council and the American Horticultural Therapy Association. The framework today uses the same five categories of health impacts; they continue to reflect current contexts. Some of the categories have taken on greater importance in health and horticulture. Examining what has transpired since 2021 provides an opportunity to update horticulture for health literature and understanding. The five primary categories of the framework include:

Health Services That Use Horticulture as an Integral Part Within a Therapeutic Modality

Formalized therapies like horticultural therapy and therapeutic horticulture, recreation, physical and occupational therapy are included in this category. The former incorporates the use of plants and gardening as foundational keystones for services. Practitioners from other health services including speech therapy, social work, mental health and counselling are including plant, nature and garden engagement in their services now to a greater extent, though this is not widespread. Greater number

of health providers are being trained in nature-based therapies and horticultural therapy (Fleming et al., 2024a). With the creation of a new therapeutic horticulture practitioner designation (THP from AHTA) it is expected that therapeutic horticulture services will expand. Virtual delivery of services, implemented during COVID-19, are now part of therapeutic modalities including those using plant-based interventions.

Groups or Movements Using Horticulture as the Catalyst for Social Interactions

A broader understanding of this category within the horticulture for health framework was advanced during COVID as part of the public's greater awareness of factors impacting health. The public's perception of social connectedness shifted during the pandemic; social connections were embraced as an important factor for health and wellbeing (Fleming, 2024b). Settings where social interactions were safe during the pandemic included gardens and nature, also expanding in recognition, acceptance and use. The horticulture for health framework identifies two subsets: political affiliations, and apolitical horticulture-based connections. Both contexts identify horticultural activity as a catalyst for social interactions. The two are distinguished by the role of advocacy, desire for social change and food systems change. Food justice, food action and food insecurity are better understood since COVID. Community gardens, urban farms and even school gardens have expanded their role in both apolitical and political contexts, with these horticulture facilities connecting people to one another, and providing platforms for community cohesion, community service, food accessibility and social connections.

Landscapes for Health: Designed Landscapes

The 2021 paper defines landscapes for health as "any landscape, designed or wild, that facilitates human health and well-being" (Sachs, 2008). This continues to hold true, with expanding interest and research for designed landscapes, and in particular, urban green spaces, defined loosely as plants and other natural elements in a human-dominated area. Examples include Atlanta Beltline parkland on an old railroad corridor, and Klyd Warren Park's 5 acres of greenway over a multi-lane highway in Dallas, Tx. Interest in sensory gardens is growing; limited research currently exists. The number of school gardens continues to grow in number, and services in these designed landscapes now include psychological services and counseling, social emotional learning sessions and food advocacy/food literacy workshops, education and food action initiatives.

Food, Nutrition, and Food Action

This horticulture for health category was not in the initial framework pre-publication. The realization that food (plant-based food), nutrition, and food production at horticulture settings like home gardens and urban farms, and their role in health necessitated their inclusion. This has been validated by COVID-19 where the relationship between food, human health and horticulture/agriculture has been advanced, evidenced by increasing awareness of food insecurity, global pandemics with limitations on food access, and research on connections between brain health and nutrition. The interconnections between other horticulture for health categories and this category (HT services, horticultural practices, landscapes for health-community gardens and urban farms), and overlapping

interests, goals and health outcomes demonstrates the relationships and synergies between multiple areas. Newer models of collaborations between community groups, gardens, hospitals and health agencies like *food is medicine movement*, produce prescription programs, and expanding number of research studies are investigating health impacts from initiatives involving food, nutrition and food action (Downer et al., 2022; Fleming et al., 2022).

Horticultural Practices

Developments in this category involve plant trends, technology used in horticulture production, horticulture best practices and the growth of plant-based businesses. The scope reflects the current state of horticulture-health connections, broad in nature and spanning business, health, horticulture, and research sectors. The public's growing demand for plant-based foods, particularly alternatives for protein and milk, transparency in food production and food safety, genome/biomedical applications, AI and biotechnology applied to horticultural practices are demonstrating how these are part of the larger horticulture for health concept. Horticultural practices category in the framework examines aspects of the horticulture-health relationship, like the four other categories, each different and distinct for each other. The framework provides an integrated, multi-dimensional, multi-sectoral perspective that no single discipline provides.

New information on horticulture for health, and resources related to particular areas like gardening, nature engagement, and COVID's positive impacts from horticulture connections (Fleming, 2024b) have emerged as important developments, complimenting and expanding the horticulture for health's original 2021 concept. This includes the establishment of two horticulture for health networks (Florida Horticulture for Health Network (FLHHN.org) and Nova Scotia Horticulture for Health Network). These provide online resources, communities of professionals, and free educational offerings. Of particular significance—one that has expanded the horticulture for health idea—is the Florida Horticulture for Health Network's Resource Hub. It was developed as a digital Resource Hub with information, research, webinars and program models in each of the five primary horticulture for health categories including information on horticulture for health's scope, gardening's health benefits, and pandemic gardening's impacts.

A growing number of health professionals appear to be using the horticulture for health paradigm as their orientation to health services, based on discussions within health forums. As mentioned previously, an expanding number of mental health professionals are taking HT training, incorporating elements of horticulture for health into their practices, with conference topics, and publications articulating mental health and horticulture for health connections (Fleming, 2023a; Fleming et al., 2023b; Whitaker Smith & Lindsay, 2022). The FLHHN Resource Hub's Populations and Programs section has expanded in the last two years to include populations where mental health is prominent—eating

disorders, trauma recovery, and mental health, the latter presented with subsets of mental health and wellbeing, mental illness and mental health facilities/gardens.

The horticulture for health paradigm continues to capture current and emerging activity, programs and research across health, business, education, horticulture and food sectors. The original journal article on the horticulture for health framework remains relevant, providing more detail than this condensed 2025 update. Both publications attempt to present the broad scope of horticulture for health where horticulture-centric services and landscapes are interconnected and cross sectoral, providing flexibility and versatility for a wide range of interventions, landscapes, businesses and services.

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Lesley Fleming, HTR developed the horticulture for health framework, with published journal papers on the topic. She leads the Florida and Nova Scotia Horticulture for Health Networks, and continues to observe and write about topics within this purview. Her most recent journal article, COVID-19 and Horticulture for Health: Positive Impacts on Gardening, Urban Agriculture, Food Security, Green Spaces, Plant Trends and Horticultural Therapy was published in the Journal of Therapeutic Horticulture in 2024.

Winter Wellness, Naturally

Text & photos by Nathaline Piedrahita-Budiman

As the winter months approach, turning attention indoors and using the bounty of summer harvests can continue to nourish and comfort through the colder months. For centuries, cultures around the world have recognized the healing properties of plants, incorporating them into traditional medicine practices. By understanding the historical and cultural significance of these plants, they can be harnessed for winter wellness.

Historical Use of Natural Remedies

From ancient civilizations to modern-day herbalism, plants have played a vital role in human health and well-being. For example, the ancient Egyptians used herbs like chamomile and mint to treat various ailments. In traditional Chinese medicine, ginseng and ginger have been prized for their restorative and energizing properties.

Nature's Medicine Cabinet: A Closer Look

Nature, and common garden plants are now recognized as ingredients for herbal remedies by many when used by trained herbalists with knowledge of herbal medicine (Maryland University Integrative Health, 2024; Mount Sinai, 2024; Chevallier, 2023). Some examples:

- **Lavender:** This fragrant herb, prized by the ancient Romans for its calming properties, can help soothe anxiety and promote restful sleep (Grünwald & Winterhoff, 2004). Studies have shown that inhaling lavender essential oil can improve sleep quality and reduce anxiety.
- **Rosemary:** Known for its stimulating properties, rosemary can boost cognitive function and memory. In ancient Greece, it was used to improve memory and concentration (Holmes, 2001).
- **Lemon:** They are a rich source of vitamin C, which is essential for immune function and can help protect against oxidative stress (Carr & Frei, 1999). Lemon peel can also be used to make soothing teas or added to potpourri.
- **Honey:** A natural sweetener, honey has been used for centuries to soothe coughs and sore throats. Local honey can also help alleviate seasonal allergies (Molan, 2001).

Many people incorporate these natural remedies into daily routines, focused on enhancing overall well-being and supporting the body's natural defenses. While many cultures worldwide have used herbal remedies for centuries, and numerous books and courses promote their use, it's important to consult with a healthcare professional for specific health concerns. The information presented in this article is intended for general information purposes only.

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Nathaline is a communications professional living in Herring Cove, Nova Scotia. She's had a lifelong passion for spending time in and learning from nature. Her time spent camping, hiking, gardening, and foraging, have inspired her to encouraging outdoors novices, to get curious about their surroundings and how we can benefit from nature on a daily basis through storytelling.

Forest Bathing: More Than a Walk in the Woods

Text & photos by Tim Mason

The positive effects of spending time outdoors - a stroll through a garden, or a hike in the forest, often results in an individual 'feeling better'. This state of mind is ambiguously subjective and can be hard to quantify through scientific methods. An afternoon hike yields a myriad of potential benefits: the physical activity of walking, increased oxygen levels through proximity to trees, connection to the natural world, and positive factors that seem immediately apparent. Recent studies indicate there are deeper advantages from exposure to trees (commonly known as 'forest bathing') that proves inhaling more than just oxygen occurs during time in nature (Li, 2010; Li, 2022; Li et al., 2022). An important 2010 study focused on the effect of breathing in phytoncides (wood essential oils) released by trees into the atmosphere (Li, 2010). These oils are volatile organic compounds, responsible for the familiar scents we associate with trees, such as pinene and limonene.

Please note - the author and Nova Scotia Horticulture for Health Network are not recommending any medical usage, rather reviewing and summarizing research that is interesting and impactful on human health.

'Shinrinyoku' is the term given to forest bathing in Japan, a short visit to a forest that is considered a form of natural aromatherapy. Originating in the early 1980's, it has long been touted as improving the physiological and psychological conditions of participants. A study investigated the effects these trips have on the immune function of adult Japanese individuals - taking blood and urine samples to measure for adrenaline & Natural Killer (NK) cell activity (Li, 2010). The reason for these measurements:

"*The concentrations of adrenaline in urine have been used to evaluate work-related stress… the subjects were found to show decreases in adrenaline in urine with lower stress….NK cells have been reported to kill tumors or virus-infected cells through the release of perforin, granzymes, and granulysin (GRN) via the granule exocytosis pathway*" (Li, 2010).

In this keystone study, male and female subjects participated in a 3 day/2 night trip to forest areas, as well as exposure to urban locations. Numerous variables were considered, including alcohol consumption, special foods, and the significant effect the menstrual cycle has on NK activity. Phytoncides were detected in the forest atmosphere, though were notably absent in the city

environment. Studies stated: "*Forest bathing trips were found to significantly decrease urine adrenaline concentrations in both male and female subjects, while a city tourist visit had no effect*", also "*indicating that the forest bathing trip significantly increased NK activity and the numbers of NK cells*". The subjects were observed for a period of time following the forest bathing trip to study how long these effects would last – "*The increases in NK activity and number of NK cells lasted for more than 7 days, while the increased NK activity lasted for 30 days. In contrast, the city tourist visit did not increase human NK activity*" (Li, 2010).

A 2022 study by Li et al. has further investigated NK activity and intracellular levels of anti-cancer proteins, hypothesizing they have a preventative impact on cancers. This empirical investigation, and others, continue to shed light on connections between forests and human health (Li et al., 2022; Hansen et al., 2017; Antonelli et al., 2019; Heckmann et al., 2024).

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Tim Mason is a nature-based gardener living in Halifax, Nova Scotia. Originally from Australia, Tim grew up with a deep love for nature which influences his work, garden design and creation, notably 'Wildlife Windows'.

THAD Therapeutic Horticulture Activity Database
https://hort.ifas.ufl.edu/therapeutic-horticulture-activities-database/

Activity: Herbs Goal: Sensory Populations: Senior/Dementia

TH Activity Plan – Exploring the Five Senses with Herbs

Text by Amy Bruzzichesi, MSW, HTR
Photo by A. Bruzzichesi
Original Publication: Bruzzichesi, A. (2024). Exploring the five senses with herbs. *University of Florida Therapeutic Horticulture Activities Database.*

ACTIVITY DESCRIPTION: Participants engage all five senses interacting with fresh, dried, and prepared herbs in a social activity session.

THERAPEUTIC GOALS:
Cognitive/Intellectual: Use thinking skills & clues to guess which herb is in the brown paper bag
Physical: Pass materials around the group; prepare tea
Psychological/Emotional: Reminisce & relax with the soothing aromas of herbs
Sensory: Engage taste, smell, sight, hearing & touch senses for sensory stimulation
Social: Socialize in a group setting; work cooperatively to solve sensory-focused challenges

Materials

Small herb pots with rosemary, mint, lavender, oregano, basil with clear labelling

Paper bags with same herbs, dried, labeled on bottom only

Prepared sour cream or cream cheese dip containing oregano, rosemary, basil

Crackers

Iced or hot lavender mint tea, made with simple syrup infused with herbs

Cups, napkins, wipes

STEP-BY-STEP PROCESS:

1. **Pre-Session Preparation:** Purchase or propagate the herbs to go into 3-4" pots for easy passing between participants during session. Prepare paper bags with harvested & dried herbs or purchased dried herbs. Prepare crackers & dip. Make iced or hot tea & prepare for travel to site if needed (See "Materials" box for herb details).
2. Facilitator begins session by introducing the five herbs to the group by name & explains that five senses of *sight, touch, hearing, smell,* & *taste* will be used to fully experience the herbs.
3. Facilitator or assistant walks around the group with each herb pot, inviting participants to *see* & *touch* the plant. Some may choose to break off a leaf for closer inspection.
4. Introduce the brown paper dried herb bags & explain that using their sense of smell, each person will take a guess at the herb in the bag. Facilitator or assistant walks each bag around the group to invite participants to open the bag & smell the herb, then reveals the herb when the whole group has had a chance to do this step. Participants could also shake the bag to hear the dried herb inside.
5. Facilitator offers small plates with crackers and oregano-rosemary-basil dip for participants to taste the herbs, as well as cups of lavender-mint iced or hot tea.

APPLICATIONS FOR POPULATIONS: This activity was developed as a sensory stimulation session used in a memory care facility with elders who ranged from conversant and interactive to nonverbal. Therapeutic goals for the group or individuals within the group can include sensory response, recognition of familiar herbs, memory

recall (with or without prompts), reminiscence, social interaction, relaxation/behavior modification, and demonstration/practice of social skills. Some people living with dementia will have compromised cognitive and memory abilities to recall (taste, memory, experience) and/or communicate. Facilitator will have knowledge of who these participants are and can modify activity with a focus on experiencing and relaxing with herb flavors and smells versus recalling or identifying herbs by name.

This sensory activity can also be the capstone of a season of growing these herbs in a facility courtyard garden, where residents can enjoy eating and drinking what they have grown all summer in a social setting as the growing season comes to an end, offering opportunities to reminisce about gardening, cooking, and entertaining.

This activity could be modified for use with other populations including people with sensorimotor skills challenges, who could for example, participate in blending herbs for a cracker dip or brewing the herbal tea as part of this type of TH activity or as a separate session or activity. Most populations can benefit from activities exploring herbs using the five key senses. Activities where tasting is a component of sensory stimulation are always popular regardless of age, abilities or TH settings.

SAFETY CONSIDERATIONS: Facilitators are responsible for knowing poisonous and toxic plants and plant parts. Prior to session, approval from facility staff needs to be obtained for all participants to taste and eat session items. Sugar or other sweeteners (amount and actual product) for lemonade or tea may not be suitable for all participants (on strict dietary regiments or other). Participants may have swallowing, allergy or contraindications with medication issues. Occupational or speech therapists, trained in using thickeners for swallowing issues can be invited to co-treat and assist in the TH activity. It is not recommended that TH facilitators administer thickening agents; this is a liability concern.

Participants may be able to pass items among themselves, or may need a facilitator to move materials through the group. Use care if herbs are passed in breakable pots; consider plastic pots for this session. Consider rice crackers or soy dips if wheat or dairy sensitivities are a concern.

NOTES OR OTHER CONSIDERATIONS: The herbs listed in this activity were those grown in the courtyard garden at the facility where this activity was developed, and the combination mentioned here created a blend that was appropriate for a tea/lemonade and a cracker dip. Botanist M. Harankhedkar, Director of Horticulture identifies herbs that play double-duty - growing well in garden settings and offering sensory health benefits (2020).

A facilitator with food creativity and/or participants can experiment with any number of culinary herbs to come up with other combinations of ideas that would work, and could invite staff and family to join in as well, using herbs that are favorites of the residents, regional favorites, or those that grow best in the area or climate.

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Edits were made for THAD purposes in 2024.
TH Activity Plan form developed by Lesley Fleming, Susan Morgan and Kathy Brechner (2012), revised in 2023.

Corrections Populations & Plant-Based Programs

Text by Lesley Fleming, HTR
Photo by Los Angeles Times
Original publication: Fleming, L. (2024). Corrections Populations & Plant-Based Programs. *Cultivate, 5*(1).

A recent review of literature for corrections populations and plant-based programming occurring in North America confirmed new research is emerging, programs continue to be implemented and physiological and psychological benefits from both empirical and practical initiatives are becoming better understood.

An examination of plant-based programming for this population sheds light on a wider variety of program models being implemented, with some program features specifically designed for subsets within the larger corrections sector - youth, female, and detention centers vs. jails, for example. Horticulture for health initiatives for "incarcerated individuals include gardening, vocational horticulture programs and therapeutic horticulture interventions. Restorative nature activities, plant production/ecology programs, beekeeping, delivery of horticulture certificate courses, and garden programs with a food security focus including food donations to local community partners are also part of this sector. These programs provide physiological benefits including relief from stress (cortisol production), physical activity, mood regulation, improved brain functioning, as well as development of positive leisure and vocational skills, and psychological benefits according to empirical studies. Their impact on recidivism is also an important area of investigation (Holmes & Waliczek, 2019; Ives, 2022)" (Fleming, 2024).

Connections to nature and access to green spaces within correctional facilities and detention centers are being studied more closely. Research by Jewkes et al. (2020) and Stevens et al. (2022) offer guidelines for designing "health-promoting" correctional environments where green space plays a key

role. Connections between rehabilitation and gardens continue to be explored (Gerlach-Spriggs & Healy, 2019).

"Research is examining the efficacy of horticulture, horticulture training and inmate behavior. More recent studies have included incarcerated juveniles, with numerous online videos documenting food gardens at detention centers, these models frequently involving master gardener volunteers. This trend identified in the Florida Horticulture for Health Network (FLHHN) Resource Hub in 2022—farm to prison cafeteria models seen at facilities for male, female and youth offenders—appears to be gaining traction in the U.S. College theses, many available online, have explored the connections between incarceration and food security (Larson, 2022; Jenkins, 2016; Benham, 2014; Choi, 2020). Other topics emerging within the corrections field: access to outdoors (Morris & Izenberg, 2023; Reddon & Durante, 2019; Zeng et al, 2024); connecting with nature (Alexander, 2024; Grant, 2020); horticulture-based programs specifically for female inmates (Cochrane, 2019; Jauk-Ajamie & Blackwood, 2024; Jauk et al, 2022); and benefits/problems with prison agriculture programs (Chennault & Sbicca, 2022; Everhardt et al., 2024; Hazelett, 2022).

A 2024 book, *Gardening Behind Bars: Clinical Sociology and Food Justice in Incarcerated Settings* by Gill, Lindhorst Everhardt and Carmody examines multiple issues related to gardening in correctional facilities" (FLHHN Resource Hub, 2024).

Programs are using a variety of therapeutic horticulture models when working with incarcerated individuals. Farm and Rehabilitation Meals (FARM) program in San Diego grows and serves farm produce in the prison. Greenhouse at Rikers Island Prison is a horticultural therapy and vocational training program, with adjunct programs Apple Seed, Greenteam, Neighborhood Plaza program, and NYDigs. Lookout Garden at Mission Institution partners with Correctional Service Canada (in British Columbia) addressing food security, food access for inmates and local communities, with particular focus and support for Aboriginal communities. And Growing Opportunities Gardening Program for girls at the Youth Transition Campus in Kearny Mesa, Cal. delivers vocational horticulture programming as a pathway/career exploration for girls aged 13-17, delivered in conjunction with master gardener volunteers. Additional programs are identified in the Florida Horticulture for Health Network's Resource Hub - *Corrections Populations & Programs*.

Resources from the FLHHN Resource Hub across categories suggest relevancy for corrections populations in various contexts where horticulture impacts their health. These include categories: Populations/Horticulture Programs in Specific Settings – Mental Health; category: Food, Nutrition & Food Action – Food Action; and category: Horticultural Therapy & Health Services – all sections. The research citations listed in this article are accessible in the Resource Hub – category: Corrections Populations & Programs.

Lesley Fleming, HTR revised the Florida Horticulture for Health Network's Resource Hub content for Corrections Populations & Programs in late 2024. Some of its free online content has been excerpted for this article. Lesley has delivered therapeutic horticulture to incarcerated men at a county jail.

Resources Winter 2025

The Nova Scotia Horticulture for Health Network is Canada's only regional horticultural therapy (HT) group according to CHTA. Horticultural therapy is part of NSHHN's scope. American regional HT groups offer various resources, with most accessible by anyone interested in the discipline:

Florida Horticulture for Health Network: Free webinars, monthly eblast *Chive Talking*, quarterly epub *Cultivate* + back issues/articles & Resource Hub. No subscription/membership fee, open to everyone.

Carolinas Horticultural Therapy Network: In-person & virtual events like Advanced Adaptive Tools & Techniques webinar, monthly clinical consultation group & facebook group. Membership (with fee) is open to everyone, not just residents of South & North Carolina.

California Horticultural Therapy Network: Professional development webinars, quarterly CHTN meetings, monthly clinical consultation group & social media groups. No membership fees; engagement is primarily with other Californian HT practitioners.

Mid-Atlantic Horticultural Therapy Network: Jobs postings for the region, annual in-person conferences & workshops, virtual webinars, networking events, site visits, scholarships, awards & social media forums. Membership with fee is open to practicing & aspiring HTs in NY, PA & NJ.

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Spring 2025 Issue of *Digging In:*
Practitioner Tool: TH Goals in Cognitive Domain, The Veteran Farm Project