

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.



Series

People-Plant Programming: Nightshade Fruit and Vegetables

By Lesley Fleming, HTR & Amy Davis, MSc.

Photo by H. Goetsch

Plant knowledge is a core competency for those delivering people-plant programming. Plants are used in many capacities such as: plant material for activities and interventions, garden design and installations. This four part series will explore plants relevant to Mid & North Atlantic regions, offering activity ideas useful for people-plant programming.

Q: What fruit and vegetables are in the nightshade family? Are they all poisonous?

A: Nightshades, from the botanical family *Solanaceae* include vegetables—eggplant, peppers, tomatoes, white potato (multiple potato varieties excluding sweet potato), okra, tomatillos, and tobacco (latter not eaten). Other edibles include ground cherries, goji berries, gooseberries, sorrel, capsicum, pepino melons, and spices cayenne pepper and paprika. Nightshades also include a wide range of perennial and annual herbs, trees, shrubs and epiphytes

CONTENTS

- 1 People-Plant Programming: Nightshade Fruits and Vegetables
- 3 Memory-Smell Connections Horticulture for Health Applications
- 5 What Are Hydrosols?
- 7 14 Uses for Vinegar in Your Garden
- 8 Horticultural Hygiene
- 10 Factors Impacting Child and Youth Development
- 12 School Food Garden Program *Grow Eat Learn*
- 15 *Grow Eat Learn* Educator Resources
- 16 The Buzz on Bees
- 17 Beekeeping Programs at Correctional Facilities
- 18 HT Activity - Fring Frang Acadian Potato Dish
- 19 Resources

Photo top right: P. Streltsov

that span food, medicinal and ornamental plants. Butterfly flower, petunia, painted tongue, bush violet and mandrake are among the better known and commonly available ornamentals.

The paradox of the *Solanaceae* family is that its plants feed the world as well as plants commonly containing alkaloids, some of which have tropane alkaloids, a particularly poisonous element. It is suggested that due to the complexity of this subject, and potential health implications, more thorough sources of scientific information be consulted. A general overview - many nightshade plants are eaten, and used effectively as medicine including tropanes in small doses (halting allergic reactions for example). Some people experience sensitivity to nightshades manifested by vomiting, rashes and excessive mucus. For some, high concentrations of nightshade consumption is potentially toxic. Evidence is lacking to support the claim that nightshades aggravate arthritis pain or inflammation, according to the Arthritis Foundation (Kluson, 2018; Arthritis Foundation, n.d.). Many of the nightshade edibles have high nutritional value.

Q: What are some activities that would use nightshade plants for people-plant programming?

A: Fruits and vegetables from the nightshade family would be obvious choices for activities focused on nutrition. The juxtaposition of health benefits and poisonous attributes within this vast plant family can provide symbolic and literal interpretations, including the Latin verb *solare* and its definition of soothing or sun's rays. Educating people about nightshades would be impactful on many levels.

Activities for people-plant programming using nightshades can span wide ranging health goals. Planting nightshades from seed, rootings or vegetative stock, then caring for them in greenhouses, outdoor gardens or containers until harvest can promote nurturing and life skills, and understanding of stages of development (human & plant). For vocational horticulture programs, growing nightshades can expand botany knowledge and develop propagation, cultivation, irrigation and pest management skills. Potato printing on cards or fabric, also fun with celery (not a nightshade), can support self-esteem and self-expression goals.

Practitioners with strong plant knowledge will be better able to select plant material appropriate for clients, taking into account plant toxicity, sensitivity to sap, sharp cones or propensity for putting items into mouths.

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Lesley Fleming, MA, HTR is a reviewer for the Journal of Therapeutic Horticulture, Editor in Chief of Nova Scotia Horticulture for Health Network's epublication Digging In, and 2018 recipient of AHTA's Rhea McCandliss Professional Service Award. Plant input was provided by horticulturist Amy Davis, MSc.

Memory-Smell Connections: Horticulture for Health Applications

By Lesley Fleming, HTR

In 1909 French novelist Marcel Proust wrote about the connection between memory and smell in his book *In Search of Lost Time*. As an important pathway for health, research investigating the complexities of the brain-olfactory sense continues to be undertaken though much of it is considered to still be in its infancy (Hacklander et al., 2019). Recent research has revealed newer dimensions, of particular interest to those using olfactory processes for therapeutic and medical purposes.

A short overview of memory-smell connections can provide a starting point for health practitioners and their understanding of olfactory strategies that may be effective for multiple populations. Aromatherapy, long practiced across disciplines, is perhaps the best known of these strategies.

Two distinct cognitive-perceptual processes play a role in health—the ability to recognize and remember a scent, and autobiographical memories and associations triggered by specific odors. The Proust phenomenon, foundational knowledge for most therapeutic disciplines, uses the acronym LOVER to refer to odor-evoked autobiographical memories - Limbic, Old, Vivid, Emotional, and Rare (Larsson et al., 2014). Research has confirmed that odor-evoked memories can promote more emotional and evocative recollections than memories triggered by any other sense because of the connection to areas of the brain that process emotion, memory and associative learning (Herz, 2016).

Research results suggest odors evoking positive autobiographical memories have the potential to increase emotional and physiological responses, decrease negative mood states, disrupt cravings, and reduce physiological indices of stress (Herz, 2016; Matsunaga et al., 2013). Relatedly, the relationship between odor-evoked memory and brain-immune interactions can be impacted by “odor-evoked autobiographic memory accompanied by positive



Photo: Drop Label Movement

emotions, with effects on various psychological and physiological responses of the autonomic immune, endocrine and nervous systems including secretion of cytokines, the immune-signaling molecules modulating systemic inflammation” (Matsunaga et al, 2013). Odor-associative learning has been effective for addressing some health issues, recognizing the neuroanatomical relationship between olfaction and neural substrates of emotion.

Within the last five years, diagnostic tests have been developed where odor identification dysfunction predicts neurological disorders including Parkinson’s and Alzheimer’s disease, as well as lifespan expectancy (Doty, 2012; Velayundhan, 2015).

Applications of evidence-based research on memory-smell connections can inform health professionals re treatment and programming:

- Many populations, particularly those with memory loss, children, and individuals in isolated living conditions may respond to olfactory sensory stimulation for many significant reasons: reminiscing memories triggered by fragrance, connection to nature, sensory activities in non-threatening gardens and outdoor spaces
- Using memory-smell connections can be effective as counter intervention for cases where smell triggers negative responses (car accidents, trauma, war), as well as strategies for stimulating positive moods, effective across populations including wellness, self-care and mental health populations
- Odors can evoke positive and negative emotions, autobiographical memories, and can impact mood and physiological responses in multiple body systems, important knowledge for therapeutic treatment planning, goal-setting, and activity selection
- Tools for using the olfactory sense are broad and can include aromatherapy, hydrosols, horticultural therapy/recreation therapy sensory stimulation and plant activities
- The use of hydrosols by nutritionists, naturopaths and those in integrative medicine continues to expand; recent research supports their use through nutritional value of hydrosols is minimal
- The use of aromatherapy and hydrosols by wellness populations, as lifestyle choices, includes products for cleaning, cooking, and health/skin care using natural plant-based products
- Diagnostic testing using odor identification to assess neurological deficits is best done by trained professionals with expertise in this psychometric specialty
- Therapeutic touch therapies using essential oils for olfactory and tactile purposes can impact memory-smell connections and related psychological and physiological responses

Practitioners educating themselves about odor, brain and memory pathways will be better able to work with, understand, and deliver quality programs to clients and populations. Sensory stimulation including olfactory stimulation is a key competency of people-plant programming, with unlimited applications using plants.

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Lesley Fleming, HTR has referred to memory-scent connections in presentations. Newer investigations relating to this health topic have renewed her interest in the field, prompting greater use of olfactory stimulation in her practice.

What Are Hydrosols?

By Lesley Fleming, HTR

Photos by Unsplash

Hydrosols are defined as distilled plant-based waters used for therapeutic, culinary, cleaning and wellness purposes. Sometimes referred to as hydrolats or floral waters, they are gaining traction in health, lifestyle and culinary fields. Hydrosols and essential oils are related; both are products of botanical distillation, where heat causes essential oil molecules to separate. Lighter molecules rise to the top suspended in water (hydrosols), and denser, heavier essential oils drop to the bottom. Hydrosols contain microscopic levels of essential oils suspended in water. Hydrosols, different from essential oils, are not combined with alcohol, carrier liquids, or other additives (Shutes, 2019).

The use of essential oils and aromatherapy have long been used for health improvements. More recently the therapeutic benefits of hydrosols have been realized, particularly because of the milder concentration, safer use by a broader range of people, and bio-energetics food trend using hydrosol ingredients (Ji & Le Vere, 2018). The most common use of hydrosols is therapeutic. Similar to herbal remedies, advocates suggest hydrosols can be plant-based solutions for improving attention, easing pain from hemorrhoids, varicose veins, depression, PMS, cool fevers and hot flashes, cleansing insect bites, wounds, acne, and reducing inflammation. Cautionary clauses are common on many hydrosol products and websites - "These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease. As with any information presented here, if you have questions or concerns, please speak with a medical professional" (Calm Mama, 2019). Some empirical evidence supports therapeutic claims (Harmon, 2010; Harris, 2006). Increased interest in natural, organic, plant-based medications continue to propel the use of hydrosols, particularly among those in integrated health, healing arts and naturopath disciplines.



Douglas Fir (*Pseudotsuga menziesii*)



frankincense (*Boswellia carterii*)

A wide range of plants are used to make hydrosols including:

chamomile (*Matricaria chamomilla*)
 eucalyptus (*Eucalyptus globulus*)
 ginger (*Zingiber officinale*)
 lemon balm (*Melissa officinalis*)
 rose (*Rosa damascena*, *Rosa alba*)
 rosemary (*Rosmarinus officinalis*)

Douglas Fir (*Pseudotsuga menziesii*)
 frankincense (*Boswellia carterii*)
 lavender (*Lavandula angustifolia*)
 neroli (*Citrus aurantium*)
 rose geranium (*Pelargonium* spp)
 yarrow (*Achillea millefolium*)

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Lesley Fleming attended a 2019 course on hydrosols at Marie Selby Botanical Gardens, piquing her interest in this aspect of sensory stimulation.

Luscious Lavender Lemonade

Soak 3 tablespoons lavender flowers, ½ cup fresh lemon juice overnight in fridge. Make lemon syrup blend by combining ¾ cup raw honey, ½ cup fresh lemon juice, 4 teaspoons lemon zest.

Combine all the ingredients in large pitcher filled with ice. Add ½ cup lavender hydrosol and 40 oz. sparkling water. Garnish with lavender flowers and mint leaves. Note that not all varieties of lavender are used for edibles. Provence and English lavender are more often used for culinary purposes. Hydrosol recipe courtesy of Patricia Starr, LMT, RA, SET



The 2020 Digging In Workshop has been postponed until 2021 due to coronavirus.

14 Uses for Vinegar In Your Garden

By Lesley Fleming, HTR

Photos by S. Gualtieri & A. Spratt, Unsplash

Let's count the way vinegar can be used in the garden, first and foremost as an environmentally friendly herbicide.

Vinegar types: distilled white, red or white wine, apple cider, balsamic, rice, champagne, sherry, black



Garden tasks:

- germinate tough seeds like nasturtiums and okra; soak in bowl overnight with a few drops of white vinegar and water
- natural weed killer capable of removing unwanted weeds from driveways and sidewalks; spray undiluted white vinegar
- eliminate slugs, snails and ants; spray areas with water/white vinegar mixture
- deter unwanted rabbits and raccoons from your garden; soak items in white vinegar and place throughout garden
- increase soil acidity (harmful to some plants), important for hydrangeas, gardenias and rhododendrons; 1 cup (c) white vinegar + 1 gallon water
- preserve fresh cut flowers; 2 T white vinegar + 2 T sugar + 1 quart water
- use oil and vinegar salad dressing on freshly harvested vegetables; ¾ c oil (olive, safflower, canola, walnut, avocado) + ¼ c vinegar (white wine, cider, balsamic)



Cleaning agent:

- clean white stains off clay pots; let sit 1 c white vinegar + 4 c water for ½ hour to dissolve salt and calcium build up
- clean bacteria and algae from birdbaths and outdoor furniture; scrub with white vinegar once a week
- erase water lines from vases; fill vase with half water and half white vinegar solution
- refresh rusty garden tools; spray and/or soak with diluted white vinegar/water, wiping tools clean
- remove berry stains from hands; use distilled vinegar
- wash vegetables; 1 T distilled white vinegar + 1 quart water
- deter fruit flies by trapping them in soap; fill jar with apple cider vinegar + drops of dish soap



Horticultural Hygiene

By Mack Lessig

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As the weather begins to cool down, more and more gardeners are taking to the fields... our gardens will be full of blooming annuals, delicious herbs, various vegetables, as well as several species of fungi and bacteria. These microscopic pathogens also appreciate these balmy, mild conditions. The temperatures are ideal, moisture is plentiful, and, most importantly, there are lots of human hands to move them about.

Keeping your garden free of these little hitchhikers is dependent on how well you practice garden sanitation. Throughout the year, sanitation practices are important, but they are especially critical in the cooler parts of the year. With that said, there are several strategies that assist with the management of these pathogenic pests in your gardens.

First, bacteria, fungi, and viruses are a normal part of our climate. The same climate that blesses us with superior growing conditions, also provides for the vast diversity and proliferation of these minuscule baddies. Gardeners are an exceptional vehicle to transport these organisms around the garden. For example, most gardeners will begin working bright and early this time of year. It would be difficult not to see why. The mornings are cool, the plants look beautiful covered in dew, and most crops are ready for harvest. This sounds ideal, right? The problematic pathogens also agree. The cool temperatures foster strong, rapid growth, the dewdrops and wet leaves provide the perfect infection points, and human hands provide free, easy movement between plants.

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The first step in garden sanitation is prevention. The outright exclusion of bacteria, fungi, and viruses can be very effective. The simple fact that the pathogen is not physically present in the garden is, in effect, interrupting the disease cycle. How does one exclude pathogens? It begins with disease-free seeds and transplants. When purchasing seeds, look for certified disease-free or trusted suppliers to ensure you are not inadvertently infecting your garden. While shopping for plants, thoroughly look over the plant and the roots. Avoid plants that have spotted leaves or stems, brown mushy roots, or that appear to be weak and spindly in growth. This preventative first step can go a long way in helping to exclude any pathogens seeking a new home. However, some plant diseases can be particularly sneaky and launch a stealth invasion of the garden.

Consequently, a new set of protocols is required to prevent and manage plant diseases that are already present in the garden. The first habit to adopt is to never work on or near plants that have wet surfaces. Bacteria and fungi have an uncanny ability to move freely in water droplets which allows for the rapid transmission of diseases.

Another strategy is to water early in the morning to minimize the amount of time the leaf is wet. Again, the longer the plant is wet, the more likely it is to become infected with a disease. Something else to consider if there are diseases present in the garden is the sanitation of the growing area and garden tools.

All garden debris including fallen leaves, diseased plants, and picked weeds should be removed from the garden area. These can provide ideal habitats for some fungi and bacteria to develop if left unattended. Garden tools, like shears and pruners, should always be sanitized with rubbing alcohol or a flame before cutting a new plant. This helps destroy any pathogens that can enter through pruning wounds.

In summary, allow for the plants to dry before working on or near them, water in the morning, remove all garden debris, and remember to sanitize all garden tools. These garden sanitation practices can go a long way in assisting with the management of plant diseases in the garden. For more information on managing diseases in the garden, visit <https://edis.ifas.ufl.edu/mg443>.

Mack Lessig wrote this article for Gardener's Bench publication in 2019. He is the Community Gardens Program Assistant, University of Florida/IFAS Manatee County.



Photo: R. Shrewsberry.Pixabay

Factors Impacting Child and Youth Development

By Kathy Carroll, BS, MS, HTR & Lesley Fleming, HTR

Photo by K. Carroll

Childhood is characterized by constant and progressive changes, varying rates of development, the sequence of development, and epigenetics, the cumulative effect of development understood as progressive mastery of challenges and tasks. Child development theory refers to functional developmental lines: cognition, interpersonal relationships, emotional development, and psychosocial development (Keenan et al., 2014). Many children are healthy; some children and youth experience one or multiple issues academically, emotionally or physically that impede their success and well-being.



There is enormous scope of variable traits and concerns children and youth within this special population may have. The following provides a brief overview of the factors and challenges children may encounter. Unprecedented levels of specialized training and experts in the field of child development provide access to resources that can supplement this brief overview (NIH, 2014).

Factors That Impact Child and Youth Development

Current theory and practice identify factors that impact child and youth populations. Ten to twenty percent of Canadian children and youth may develop a mental disorder (CIHI, 2020). Approximately 1 in 6 U.S. children aged 2-8 years have a diagnosed mental, behavioural, or developmental disorder (CDC, 2019). Large numbers are not receiving mental health services.

Adverse Childhood Experiences (ACEs) are defined as “negative experiences children may face or witness while growing up... .includ[ing] emotional, physical, or sexual abuse; emotional or physical neglect; living in a household in which domestic violence occurs, or where a family member with substance-abuse or other mental disorder resides; parental separation or divorce; or an incarcerated family member” (Psychology Today, n.d.). Positive childhood experiences (PCEs) also contribute to child development.

Environmental factors that contribute to child and youth health challenges include: poverty, racism, hunger/nutrition, abuse, parental psychopathology, and genetic/biological, psychosocial, and cultural forces referred to as biopsychosocial development. Sociodemographic factors like ethnic, cultural, and economic influences play a role in child development. Physical environmental factors including exposure to lead, tainted water, sugar and loud music, among others, continue to be investigated, particularly the impact they may have on young children (NRC, 2004).

Physical and medical issues that impact children's health and well-being include height, weight and size, trauma, accidents or illnesses that limit motion/vision/hearing/kinetic abilities, touch or smell sensitivities, attention deficits (ADD) and other diagnosed or undiagnosed disorders. Medical issues from birth and throughout childhood, medication, and allergies can also play a critical role in child development.

Health issues facing child populations like obesity, autism spectrum disorder, suicide, addiction to digital devices, social pressure from social media, and less interest and affiliation with nature, appear to be on the rise. Research in the field of biology has revealed newer links between genes and children's susceptibility to a range of behaviours including perfect pitch and reaction to post traumatic stress, in addition to long-standing knowledge re hereditary connections to diseases like sickle cell anemia (NRC, 2004).

Academic issues that emerge in childhood include learning disabilities, mental limitations, autism, and superior intelligence with limited social skills. The use of individualized educational plans (IEPs) seeks to address issues, providing supportive services within educational forums.

Emotional issues like bullying, suicidal tendencies, eating disorders (obesity, bulimia, anorexia), mental and physical abuse, and family dynamics may contribute to anxiety, depression, and oppositional defiant disorders, a few examples where emotional challenges adversely affect child development.

Growing evidence of factors influencing child and youth development provides important data that can inform professionals delivering services and programs to this special population in educational, therapeutic, recreational and medical forums.

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The article is based on Kathy Carroll's 2019 Digging In workshop presentation Best Practices for Special Populations, and her 35 years of experience and training working with children in educational and horticultural therapy settings. Lesley Fleming provided research support.

School Food Garden Program *Grow Eat Learn*: Shaping Positive and Enduring ‘Food to Plate’ Habits

By Tara Perrot, PhD

Photos by Nourish Nova Scotia



Each of us has a vivid memory from early childhood – one in which we can almost relive the moment, complete with sights, smells, sounds, and touch. Contrast this with the difficulty we encounter as adults trying to remember what we had for breakfast yesterday. This difference is partly because we are acutely attuned to experiences in early life - they not only teach valuable skills they literally shape our brains at the cellular level. Via a process known as epigenetics, our early

experiences dictate how and when specific genes we have are turned on, ultimately influencing our adult preferences and behaviours. Such capacity for shaping positive and enduring habits and behaviours in early life is at the heart of the *Grow Eat Learn* program developed by Nourish Nova Scotia (NNS).

Margo Riebe-Butt, Executive Director of NNS, is passionate about *Grown Eat Learn*, seeing the program as representing ‘hope’ for the future of Nova Scotia (NS) youth. The idea for the new Nourish program dates back to 2014, and since the first planning meeting in 2016, attended by members of NNS and the Ecology Action Centre (EAC), teachers, school and health administrators, parents, and volunteers, hours of work have gone into refining the program. Publication of its *Guiding Practices* in Fall 2019 (<https://www.nourishns.ca/grow-eat-learn>) form the foundational principles for a program that aims to ‘support, enhance, and grow’ school food gardens (SFGs) in NS. It includes a list of resources available for teachers (<https://www.nourishns.ca/gel-resources>), particularly important because more than a third of the identified 108 school food gardens in Nova Scotia were established during 2017-2018 (Baseline assessment by C. Seth, May 2019). The importance of the *Grow Eat Learn* program is firmly rooted in research demonstrating positive impacts of school food gardens on various outcomes, including those associated with health, most notably in connection to nutrition and diet (Blair, 2009; Heim et al., 2009; Robinson-O’Brien et al., 2009). Indeed, in NS, the produce from school food gardens is mainly consumed by the children at the school in the form of snacks (49%), via breakfast programs (18%) or included in school lunches (30%) (Seth, 2019).

Nutritional benefits of school food gardens for kids represent *indirect* positive effects – they occur as a result of the end product of the school food garden, with potentially long-lasting influences on food choices and behaviour. The importance of this cannot be overstated as malnutrition is a serious health concern, with considerable attention from the World Health Organization (<https://www.who.int/nutrition/en/>) and the United Nations (<https://www.un.org/nutrition/>). According to WHO food health expert, Dr Francesco Branca, “Malnutrition is a complex problem to solve but, as levels of undernutrition and obesity rise, something must be done”

(<https://www.who.int/nutrition/topics/world-food-day-2019-malnutrition-world-health-crisis/en/>). This quote from Dr. Branca underscores that *malnutrition* refers to deficiencies, excesses or imbalances in a person’s intake of energy and/or nutrients that can result in a variety of long-term health-related issues related to being underweight or overweight (<https://www.who.int/features/qa/malnutrition/en/>). In NS, approximately 30% of children were overweight or obese in 2018 (<https://novascotia.ca/dhw/healthy-development/children.asp>), highlighting the vast potential benefit that prevention through good nutrition as early as possible could have in terms of disease mitigation (Fall & Kumaran, 2019). Programs such as *Grow Eat Learn* are a vital part of a preventative strategy.

School food gardens also have *direct* positive effects on health, including mental health. Exposure to nature, in general, buffers the effects of life stress and adversity in children (Wells & Evans, 2003) and has beneficial effects on adult health (Bowler et al., 2010). Quotes taken from teachers surveyed in NS included “The vegetable beds at our school are a great addition to the natural playground”, essentially expanding the area of nature exposure for the children. For some schools, building a school food garden changed a concrete landscape to a green one.

Many activities that are part of maintaining school food gardens could be classified under therapeutic horticulture (Bahamonde, 2019). Research specifically designed to assess the benefits of school food gardens on mental health outcomes in children are presently far and few between. The need, however, is vital, as an estimated 1.2 million Canadian children and youth are impacted by mental illness (Mental Health Commission of Canada (MHCC)) and mental health services throughout North America are not sufficient to meet the needs of children and youth (Bahamonde, 2019; Health Canada, 2017). Although more work is required to empirically assess the benefits of school food gardens for youth mental health outcomes, there is evidence for positive effects of gardening in young children with respect to processing, managing, and conveying

School Food Garden Example

BEFORE the ‘Take Action Society’ created the Outdoor Classroom and Community Garden at Harbour View Elementary School, Dartmouth, NS.



AFTER the work of the ‘Take Action Society’ was complete. It’s worthy to note that crime (e.g., broken windows) dropped significantly after the garden was complete and that the kids have switched from snacks of potato chips and chocolate bars to fresh beans, peas, cherry tomatoes, etc. (Roseanna Cleveland; thetakeactiongroup@live.ca)

Margo Riebe-Butt, NNS, commented that teachers and volunteers working with SFGs, even those that have had successful personal gardens for years, were reluctant to refer to themselves ‘gardeners’. The children, however, working with these same SFGs were more than happy to label themselves ‘gardeners’, illustrating the optimism of youth, and the fact that early experience with SFGs is shaping how they think of themselves, will shape their future interactions with the world around them, and potentially benefit their adult health.

emotions (Miller, 2007). Development of such skills is associated with better mental health outcomes (Trompetter et al., 2017).

Given the fact that only 20% of Canadian youth receive the mental health services they require (MHCC), school food gardens could fill a significant gap by providing direct benefits in the form of therapeutic horticulture. Even in schools facing significant challenges (e.g., space, resources) with respect to creating traditional school food gardens, when provided with possible alternatives (e.g., tower gardening), perceptions by school counselors were very positive about the potential benefits (Bahamonde, 2019). In NS, benefits of school food gardens, as indicated by surveyed teachers, included ‘building patience, resilience, and responsibility’ (Seth, 2019), features that are at the core of positive mental health. Thus, through its proposed support of school food gardens, the *Grow Eat Learn* program has tremendous potential to exert direct benefits on the emotional resilience, stress management, mental health of NS youth.

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Grow Eat Learn Educator Resources



Nourish Nova Scotia's *Grow Eat Learn* program, developed for school environments, and informative for all types of gardens and programs, has a site with more than 80 fabulous resources. Organized into 13 sections by garden topics, a variety of articles provide a rich database. Resources come from a range of organizations including Ecology Action Centre, Green Schools, Province of NS, Canadian Organic Growers, Whole Kids Foundation & Nourish Nova Scotia.

<https://www.nourishns.ca/gel-resources>

Starting A Garden: *Fundraising with Healthy Food and Beverages Manual* suggests following food safety rules, be allergy aware, and use healthy eating options like trail mix, whole grain muffins, fresh local fruit & fruit baskets, and smoothies. <https://www.ednet.ns.ca/docs/foodnutritionfundraising.pdf>

Planting 101: Publications in this section relate to gardening, like *Every Seed Tells a Tale* book, e-bulletin from Seeds of Diversity non-profit, members' magazine with resources like where to find Canadian seeds, organic vegetable seed production course, and list of seed exchanges throughout Canada. <https://seeds.ca/sw8/web/books>

Games and Activities: Downloadable pdfs include *Learning in the Garden*, *Where Does Your Food Come From?* and *The Nature Playbook*. <http://www.parks-parcs.ca/pdf/playbook/nature-playbook.pdf>

Harvest: *School Food Garden Up Guide*, *Garden Workshop Curriculum*, *Can Your Harvest*, and *Weeding Wednesday* are pdfs and guides available at <https://ecologyaction.ca/sites/default/files/images-documents/Garden%20Workshop%20Curriculum%20EAC.pdf>

Learn in the Garden: Activity-based resources include *Egg Carton Garden*, *School Compost*, *Make Seed Paper*, *Teacher's Guide – Imagine Canada*, and *Mi'kmaw Resource Guide* in this section. <https://static1.squarespace.com/static/5b5b5824f2e6b10639fdaf09/t/5d93887acbe0636679ca747/1569949818759/Make+Your+Own+Seed+Paper.GEL.102019.pdf>

Connect with Nature: *Vermicomposting*, *Make an Octopus Rain Barrel*, *Grow Your Own Micro-greens*. <https://static1.squarespace.com/static/5b5b5824f2e6b10639fdaf09/t/5d938735064f0615419050f4/1569949494597/Micro-Greens+Activity.GEL.102019.pdf>

Co-create Welcoming and Inclusive Spaces: Topics include *Rectangular Raised Bed Garden*, *Three Sisters Garden Lesson Plan*, and *Barrier Free Community Gardening*. <https://kidsgardening.org/lesson-plans-three-sisters-garden/>

Create a Safe Environment: *Maintain Safety in the Garden and Guide for Planting, Growing and Harvesting Fresh Produce to Reduce Health Risks* <https://www.wholekidsfoundation.org/school-gardens>

The Buzz on Bees

By Lesley Fleming, HTR

Did you know that bees and other pollinators affect one in every three bites of food? No wonder there is increasing interest in bees and their contributions to the environment, agriculture and health.

Curious science facts about bees—queen bees can lay up to 2,000 eggs in one day, her pheromone preventing other bees from making eggs. Honeybees can fly up to 20 mph using their four wings with the ability to forage up to two miles from the hive (Maidl, 2019). Some bees are picky about the plants they visit, others not so particular. Bees emerge from winter at different times; mason and digger bees in April, leafcutters and bumblebees mid-season, and sweat bees at summer's end.



Photo: T. Piedras. Unsplash

There are 25,000 known species of bees globally, 400 species in Canada, and hundreds of species native to Nova Scotia (Burns, 2019; Porter, 2012). Honeybees are domesticated and one of the most common types of bees. They, like all species have seen population decline due to anthropogenic factors of pollution, climate change, disease, detrimental agricultural practices, and habitat fragmentation.

Anthony Melathopoulos of Dalhousie University, offers insight into bees in Nova Scotia (Porter, 2012). The more common species in the province, each with their own particular traits, include mason bees, digger bees, wild bumblebees, leafcutter bees, and sweat bees (photo). Mason bees cocoon for the winter. Digger bees are small, solitary species living in soil, and have a unique velvety patch between their eyes. Bumblebees are larger in size, carry pollen on their legs, and can live in abandoned rodent dens. In contrast, the smaller sized leafcutter bees are not social like bumblebees, carry pollen on their abdomen, and prefer to nest in beetle holes. Sweat bees have metallic coloring in bronze, blue and green.

Life cycles of bees are important for pollination, honey production and reproduction. Leafcutters for example lay eggs inside twig tubes; their babies chew their way out. Bumblebees have about four small babies. Mason bees lay one egg onto a provision, two to three eggs per day, constructing a protective mud walls around each. Female digger bees build nests for offspring for a large part of their lifecycle, with little help from the male. Sweat bees lay eggs as larvae in the winter, emerging in the spring.

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Beekeeping Programs at Correctional Facilities

By Lesley Fleming, HTR



Photo: A. Mora Angulo



Photo: B. Jaglicic

Nurturing bee colonies - building these communities, can be a literal and symbolic analogy for beekeeping programs at correctional facilities. Participating inmates benefit from an enhanced sense of belonging and purpose, connecting with nature, increasing physical activity, and lowering stress. A vocational training focus can provide important skill development for post-incarceration employment and entrepreneurial opportunities. Various terms have been applied to such programs including bee therapy, social work intervention, and therapeutic horticulture.

With an increased focus on green criminology, typically referring to environmental harm (Nurse, 2017; South & Brisman, 2013), beekeeping has been viewed as a small remedy disrupting environmental distress, specifically the decline of bee colonies.

There are a limited number of beekeeping programs within Canadian correctional institutions, with a greater number of programs operational in the U.S. Washington state's *Sustainability in Prisons Project* is perhaps the best known example. Its success has led to participation in research studies and the development of *Beekeeping in Prisons Program Guide*.

Factors contributing to the sustainability of beekeeping programs include collaborations with post-secondary schools which support the initiatives by delivering educational and certification courses, and local beekeeping associations that provide bee expertise. Commitment by senior corrections officials is also essential for beekeeping programs to flourish.

Corrections Services Canada (2019). From offenders to beekeepers: A first bee keeping initiative in Ontario.

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HT Activity Plan – Fring Frang Acadian Potato Dish

Text and photos by Lesley Fleming, HTR & Kathy Carroll, HTR



ACTIVITY DESCRIPTION: Making a traditional Acadian food using raw potatoes.

THERAPEUTIC GOALS:

Physical: maintaining hand dexterity, strength and pincer grip

Emotional: enhancing mood through sensory stimulation

Intellectual: cognitive practice of following sequential steps, historical food interpretation

Social: making and consuming food in a group setting



STEP-BY-STEP PROCESS:

1. Each participant peels & grates 2 potatoes.
2. Light BBQ using a flat surface skillet.
3. Mix grated potato, squeezing water from mixture, forming into golf balls. Place on hot, oiled grill & flatten. Cook until outer edges turn crispy brown.
4. Put pat of butter on fring frang patty one at a time & flip over.
5. Cook till both sides are browned and soft.
6. Serve and eat plain or with fruit or condiments.

APPLICATIONS FOR POPULATIONS: This activity is appropriate for most populations. Sensory stimulation from tactile, gustatory, olfactory and visual elements can engage all levels of Intellectual abilities. Discussion of historic, nutritional and horticultural aspects will appeal to higher functioning participants based on Acadian foodways and culture. Prior activities can include planting & harvesting potatoes. Appropriate for special events, food festivals, & community garden events.

Materials

potato- 2 per person
peeler, hand grater,
BBQ & flipper,
butter, oil, salt,
bowl, plate,
eating utensils

SAFETY CONSIDERATIONS: Essential to check with staff and individuals before the activity for allergies, swallowing difficulties, contraindications with medication. Leader may choose to cook on BBQ.

NOTES OR OTHER CONSIDERATIONS: Referencing the Acadian culture and its food traditions offers an added element of interest while recognizing the cultural influences important to Nova Scotia and other Acadian communities.

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Parks Canada (2019). Acadian fring frang. Retrieved from <https://www.pc.gc.ca/en/lhn/nhs/ns/grandpre/activ/fringfrang>

Mechefske, L. (2017). Rediscovering Acadian food. *The Kingston Whig Standard*. Retrieved from <https://www.thewhig.com/2017/07/14/rediscovering-acadian-food/wcm/6b1ba134-fa5c-3ede-ae58-cb5b21280195>

HT Activity Plan form developed by Lesley Fleming, Susan Morgan and Kathy Brechner 2012, revised in 2018.

Resources Summer 2020



Sensory Stimulation & Metaphors in the Garden, by Peruvian HT practitioner, introduces different senses-sense of control, sense of place, sense of beauty.

<https://htinstitute.org/community/sensory-stimulation-metaphors-in-the-garden/>

Play Intervention for Dementia (PID): Website introduces research and development of an intervention program focusing on the challenges of dementia referred to as the N3Cs (needs, capacity, circumstances & characteristics).

<https://www.researchgate.net/project/Play-Intervention-for-Dementia-PID>

Jailhouse Garden at Rikers Island article in the *New York Times*.

<https://www.nytimes.com/2019/10/04/nyregion/garden-rikers-island.html>

Integrating Art Therapy and Horticultural Therapy to Best Serve the Needs of At-Risk Adolescents: A Literature Review graduate thesis by Kara Rodecker.

https://digitalcommons.lesley.edu/cgi/viewcontent.cgi?article=1083&context=expressive_theses

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Intellectual Stimulation Using Weird Plants and Connections between Veterans & Poppies

Publisher & Editor in Chief Lesley Fleming, HTR

Special Contributor Kathy Carroll

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