

The Global Centre for Climate Action
BMO Climate Action Speaker Series



Flax and Furious

A community-based approach to
sustainable fibre research

Generously supported by:



Background photo supplied by Jennifer Green

Land Acknowledgement



OCAD University acknowledges the ancestral territories of the Mississaugas of the Credit, the Haudenosaunee, the Anishnaabeg and the Huron-Wendat, who are the original owners and custodians of the land on which we live, work, and create.



Jennifer Green

**Associate Professor, Division of Craft
NSCAD University**

Jennifer Green is an Associate Professor of Textiles/Fashion at NSCAD University, and Principal Investigator of the Flax Fibre to Fabric Project. She began growing flax in 2010 to connect with the plant origins of linen, a textile material she was using as a handspinner and weaver. After many years observing the disconnected agriculture and craft sectors in Eastern Canada, she launched the Flaxmobile Project, an initiative focused on strengthening the local natural fibre industry by conducting skills development and training and creating networking opportunities for geographically decentralized farmers and craftspeople. Her research has been funded by the Change Lab Action Research Initiative, Research Nova Scotia, the Sustainable Communities Challenge Fund, and the Social Sciences and Humanities Research Council. This work is supported by additional research projects such as “Woolgathering: Revitalizing a Local and Sustainable Wool Industry in Nova Scotia”



Shannon Gerard

**Associate Professor, Publications and Print Media
OCAD University**

Shannon Gerard crochets (a lot), makes books, quilts political protest banners and produces site-specific textile installations. As a professional mischief maker, her public/pedagogical projects emphasize the materials and ethos of independent publishing as social-political engagements. Shannon is an Associate Professor in Publications and Print Media at OCAD University and an herb & seed farmer.

Current projects include [Plant Parenthood](#), a farm-based publishing imprint that so far includes a radical seed subscription club and zines about herb production and Terroir, a book series exploring the relationships between small scale farming, food sovereignty, climate action, radical pedagogy, and liberation movements.



Flax Fibre to Fabric

An Innovative Transition Design Framework for Sustainable Agriculture Value Chains



Flax (Linum Usitatissimum)



Photo: Brielle LeBlanc, Wiebke Schroeder, Lola Brown

The Flaxmobile



Photos: Wiebke Schroeder, Jody Nelson, Lola Brown

Fieldwork with Farmers



Photos: Wiebke Schroeder

Fieldwork with Farmers



Photos: Lola Brown

Fieldwork with Farmers



Photos Lola Brown

Fieldwork with Farmers

2024

COMMON ROOTS URBAN FARM

Fibre Flax Planting Log



GROWTH

June 12, 2024 (Day 16)

BBCO Scale Stage	22 (Stem 80% of final length 100 cm)
Plant Height Range	20-32 cm
Average Plant Height	30-32 cm
Rooting Observed	Yes

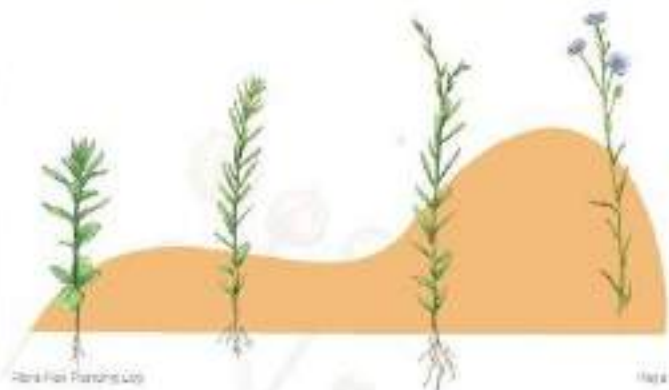
note a small growth in root length weekly

Germination

Common Roots had exceptional germination on both the hand broadcast and row seeded plots. Germination was dense (almost too dense) and the plot growth at this stage was lush. The plants are 20-38 cm high and 30-32 cm on average, which is quite tall and establishes for this date in one growth cycle. The plants look healthy with bright a lush green colour and long extending true leaf pairs. The plant height range is quite consistent, without much variability. There is no sign of nutrient deficiency at this stage. Stalks vary in thickness from 1-2 mm.

Weed and Pest Pressure

There is very low weed pressure on both the hand broadcast and row seeded plots. The primary weeds are clover, chickweed, fat nasturtium, purple amaranth, lamb's quarters, and perennial grasses (green, foxtail and dock). Less invasive weeds include dandelion, thistle, common purslane, and buttercup. There appears to be somewhat equal weed pressure in both the hand broadcast and row seeded beds, in each area of the hand broadcast bed.



PROCESSING

November 2, 2024

Flax Plant Length	100 cm
Flax Plant Consistency	Fine and Medium
Retting Method	Slow
Processing Method	Machine Processing (Barbed)
Dry Flax Input	23.77 kg
Longline Fibre Yield	2.75 kg
Short Tow Fibre Yield	1.553 kg
Flax Waste (Scutched and Broken)	5.628 kg
Flax Shive	12.7 kg

Table 6: Summary of processing process

For the annual harvest harvest, we set up a flax processing station which included two flax breakers, two retting splines, and a table with coarse and fine hedges. During the harvest, we invited people of all ages to join in the flax processing. The flax broke easily from the stem showing a good retting level. We separated 3 from 1-4cm, with many children and adults joining hands on experience retting the flax. Unfortunately, due to the dryness of the flax, we did not fully process the amount of dry flax to help the flax process.

Common Roots
Urban Farm 2024

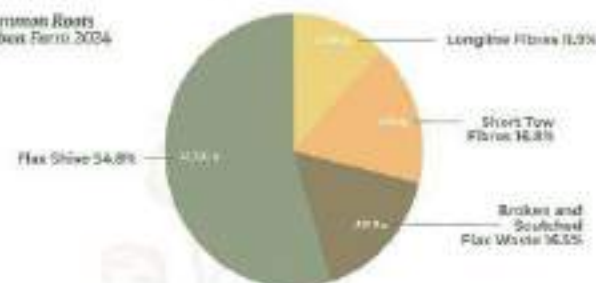


Table 7: The plant flax processing report help of the flax plant in processing for the flax plant of the flax plant.

Flax Planting Log

Page 12

Community Education and Outreach



Illustration: Caitlyn Gass



Photo: Brielle LeBlanc

Connecting Farmers and Craftspeople



Colours produced by dew and water retting methods. From left to right: Ross Creek Centre for the Arts, Nerdy Girls Farm, Glenryan Farm, Upperbrook Farm, Turn a New Leaf Farm, Flying Finch Studio, Glenryan Farm, SpringTide Farm, Great Life Farm, Mount Hanley Farms, Flying Finch Studio

Photo: Wiebke Schroeder

Connecting Farmers and Craftspeople

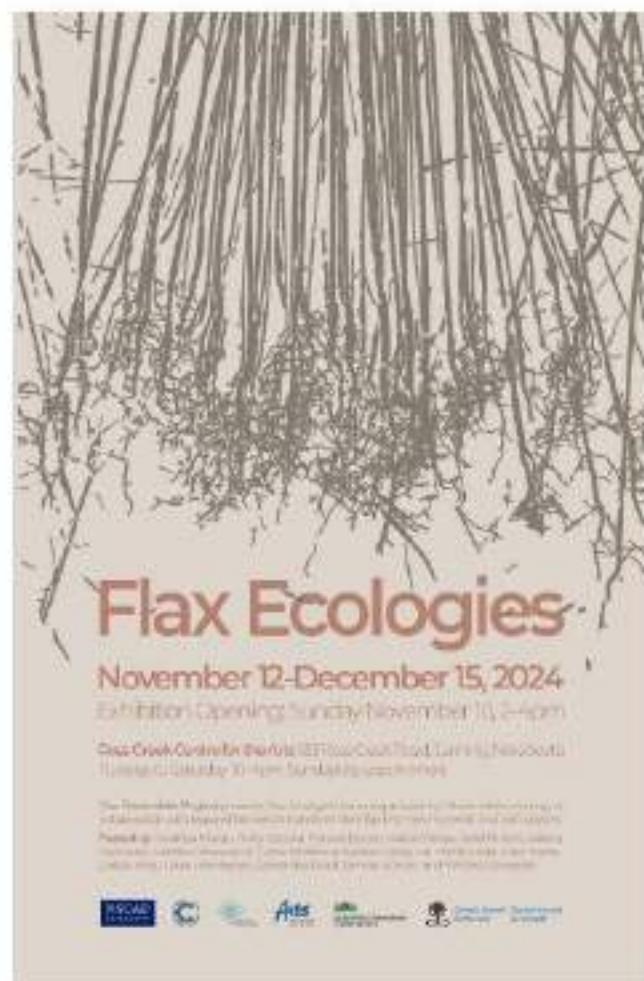


Photo: Wiebke Schroeder

Textiles as Living Systems



Photo: Benjamin MacDonald

Transition Design Methodology



Transitioning entire societies toward **more sustainable, long-term futures** is what Thomas Berry called the 'great work' of the 21st century.

It will involve **ongoing, systems-level change** over long horizons of time.

And will challenge us to develop **a deep understanding of complex systems.**

Wicked Problem Statement

A global supply chain for textile materials has displaced the local production of fibres and textiles.

Transition Design Methodology

Transition Design Seminar

- Home: About Transition Design
- Course Overview & Structure
- Requirements & Grading
- Course Calendar
- Classes
- Assignments
- The Transition Design Framework
- Resources

About the Assignments

Assignment #1: Mapping Wicked Problems

Assignment #2: Mapping Stakeholder Relations

Assignment #3: Mapping the Evolution of a Wicked Problem

Assignment #4: Designing for Transitions

Assignment #5: Designing Systems Interventions

About the Assignments

The 5 assignments in this course comprise 75% of the grade, and are designed to acquaint students with the emerging Transition Design approach for addressing complex, wicked problems and seeding/catalyzing systems-level change and cover the following topics: 1) Mapping Wicked Problems; 2) Mapping Stakeholder Relations; 3) Mapping the Evolution of a Wicked Problem; 4) Designing for Transitions; 5) Designing Systems Interventions. Together, the 5 assignments (each of which is comprised of both a Miro template and a Medium article that describes the process and insights of the work) challenge project teams to frame a complex, wicked problem within a radically large spatio-temporal context in order to design an 'ecology' of systems interventions that simultaneously address the problem and ignite positive, systems-level change. Our hope is that it will provide students from a wide variety of disciplines with new tools and methods to collaborate on transdisciplinary teams to address complex, systems problems.

COMPLEX PROBLEMS MUST BE FRAMED WITHIN RADICALLY LARGE CONTEXTS

THE PAST

How did the problem evolve over decades or hundreds of years?

THE PRESENT

How is the problem manifesting in the present and who does it affect?

THE FUTURE

What would be possible in the long term future if the problem were resolved?

Community Engagement Sessions



Photo: Wiebke Schroeder

Community Engagement Sessions



Photos: Scott Munn

Community Engagement Sessions



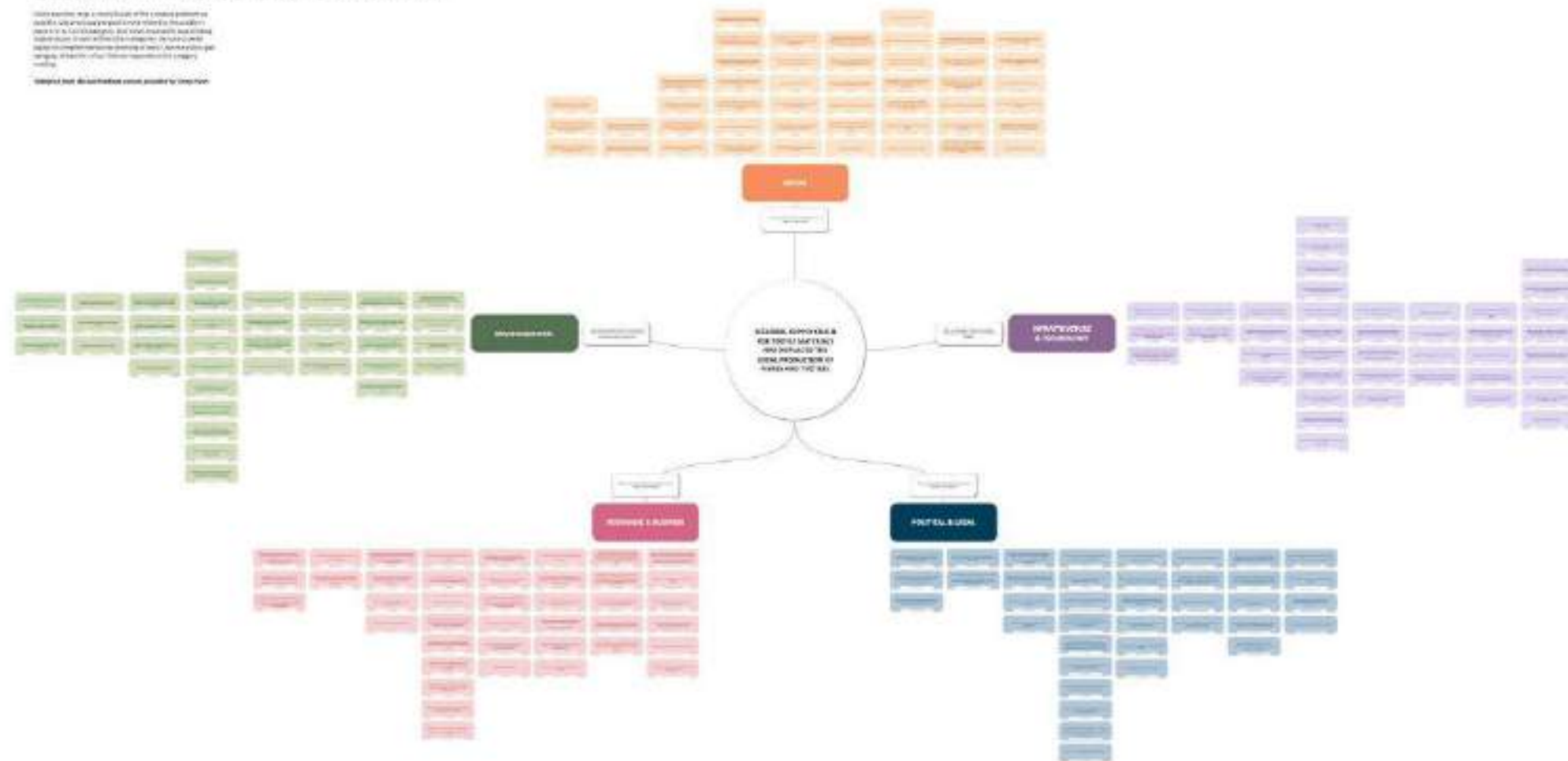
Photos: Wiebke Schroeder

COMMUNITY ENGAGEMENT SESSION

Mapping the issues related to the problem in 5 societal sectors

Issue sectors map: a visualization of the complex pattern of issues and relationships in a particular issue sector. It is a tool for mapping the issues and relationships in a particular issue sector. It is a tool for mapping the issues and relationships in a particular issue sector. It is a tool for mapping the issues and relationships in a particular issue sector.

Map of the issues related to the problem in 5 societal sectors



Community Engagement Sessions

Themes that Emerged in Stakeholder Problem Mapping

SOCIAL

Key Issues

Lack of Knowledge and Skills

Low Socio-Cultural Value

Local Textiles Do Not Reflect Global Trends

Consumers Choose Lower Cost Items

Additional Issues

Isolation and Lack of Community

Culture of Consumption

Limiting Mindsets

Discrimination and Inequity

INFRASTRUCTURE & TECHNOLOGY

Key Issues

Lack of Infrastructure and Technology

Limited Infrastructure Results in Low Competitive Advantage

Lack of Specialized Knowledge and Labour

Additional Issues

Existing Technology Supports Unsustainable Production

Lack of Funding and Support for Infrastructure

Discrimination in the Industry

POLITICAL & LEGAL

Key Issues

Inadequate and Restrictive Regulatory Frameworks

Lack of Government Funding, Programs, and Supports

Lack of Political Interest and Creative Problem Solving

Trade Liberalization Prohibits Local Manufacturing

Additional Issues

School Mandates and Priorities

Historic Discrimination and Discriminatory Policies

Lack of Belief in Government

ECONOMIC & BUSINESS

Key Issues

High Cost and Risk of Doing Business

Competition with the Global Market Impedes Local Economic Growth

Additional Issues

Underdeveloped Local Market and Sector

Lack of Funding and Business Development Programs

Economics of Labour

Lack of Knowledge and Information about Creating Viable Textile Businesses

ENVIRONMENTAL

Key Issues

Practices That Adversely Affect the Natural Environment

Limitations of the Local Climate and Climate Change Adaptation

Economic Considerations over Environmental Impact

Lack of Awareness and Knowledge

Additional Issues

Practices that Positively Affect the Environment

Lack of Value-Added Product Opportunities

An Ecology of Interventions



Photo: Brielle LeBlanc, Lola Brown, Wiebke Schroeder

Flax Fibre to Fabric Project

The goal of the Flax Fibre to Fabric project is to develop an operational fibre flax value chain in Atlantic Canada that mitigates GHG emissions, contributes to a net-zero economy, and supports socio-cultural resilience through regional economic development and marketable value-added products.



Photo: Lola Brown, Logan Hawkes, Wiebke Schroeder



Sustainability Goals

The following goals were identified as key components for the development of a thriving wool industry in Nova Scotia. Each of the goals informs and intertwines with the others, reflecting common value systems and the entangled nature of environmental, economic, and social relationships.

Ecological

Animal Welfare



Prioritizing the welfare of fibre-producing animals means supplying them with nutritious feed, clean water, adequate shelter, sufficient space to roam, opportunities to socialize, as well as breeding responsibly and shearing respectfully. As an animal's quality of life improves, they will be capable of producing higher yields and better quality fleece. Wool producers would be encouraged to follow the Canadian Verified Sheep Program or the Responsible Wool Standard, both of which contain guidelines for ensuring the safe and ethical treatment of sheep.

Land



Responsible land stewardship is vital to a sustainable wool industry. As temporary inhabitants of Mi'kma'ki, acknowledging the effects of textile production and processing on the land and eliminating harmful practices such as clearcutting, the use of hazardous materials, and pollution is essential. There is also a need to ensure plants used to create complementary fibres are not invasive or dangerous to local ecosystems. The ultimate goal of responsible land stewardship is to create a zero-waste model of production that is self-sustaining, turns waste into nutrients, and improves the quality of soil and water, creating a living tapestry that expresses our history, values, and identities.

English Longwools & Their Crosses

The English Longwools originated from sheep brought to the United Kingdom by the Romans about 2000 years ago. Longwool sheep are physically large, with long, curly coats that can be shorn twice per year to manage fibre length. The fleeces are generally a medium to very long staple length, with well-defined locks. There is a wide range in fibre diameters, but due to the low number of scales per inch, some Longwools are smooth and suitable for next to skin, while others are not. Longwool fibres lie together naturally and are well suited to worsted spinning but may be combined with shorter fibres for semi-worsted. The high strength, durability, dyeability, and lustre of the coarser fibres makes them ideal for upholstery and rugmaking.



Fleece weight: 1.3-2.7 kg

BLUEFACED LEICESTER

Bluefaced Leicester (BFL) originated from Northumberland, England in the early 1900's and were brought to Canada in the 1970s. They are a descendant of Bakewell's Leicester Longwools. Bluefaced Leicesters are named for their blue faces which are due to the sheep's black skin being covered by short white facial hair. The Bluefaced Leicester, a white wool breed, can carry a recessive black gene and produce coloured lambs. A lock of Bluefaced Leicester fibre is about half the size of most other longwools. The fibre has a good amount of bounce, elasticity, and high lustre. Kemp and hair fibres are absent, which combined with the fine fleece makes the wool ideal for next to skin garments with a beautiful drape.

Fibre diameter: 24-28 μm

Staple length: 7.5-15 cm



Fleece weight: 4.5-6 kg

BORDER LEICESTER

Border Leicester sheep are an old breed, having originated in Leicestershire, England in the late 1700's. Descended from Leicester Longwool and Cheviot sheep breeds, they were brought to North America in the early 1900's. Border Leicesters have an alert and dignified look. Their head and legs are clean of wool, and their upright ears are distinctive. Their wool is low in lanolin, and raw fleece yields approximately 70% wool after scouring. Border Leicester wool is long and lustrous with well-defined locks that have tight curls from the base to the tip. Fleece colours can be white, black, or grey, with a silky handle that is considered best for durable outerwear.

Fibre diameter: 30-38 μm

Staple length: 12-25 cm



Fleece weight: 4-5 kg

COTSWOLD Critical Conservation Breed

Cotswold is a very old sheep breed hailing from the Cotswold Hills, England. They are considered to be direct descendants from the Roman original longwool sheep. Cotswolds arrived in North America in the 19th century but are currently a Critical Conservation Breed. Cotswolds are a large breed with heavy fleece. Their locks have heavy well-defined ringlets with a silky lustre. The fleece is most often white but on rare occasions is black or grey. The fibre has a long staple and can be spun worsted or woolen, depending on its character. It is also an excellent wool for felting.

Fibre diameter: 37-40 μm

Staple length: 5-25 cm



LINCOLN LONGWOOL Critical Conservation Breed

Lincoln Longwool sheep are descended from Leicester Longwools and Old Lincoln sheep. Lincolns originated in Lincolnshire, England and were brought to North America in the 1800's. Lincoln is a progenitor of many modern sheep breeds, including Corriedale, Polwarth, and Targhee. Its population is low and has critical conservation status. Adults can weigh up to 150 kg, making it one of the largest breeds. A lock of Lincoln wool is wavy, silky, and very lustrous. Yarns have a lovely halo, and the extreme length of the fibres allows for a softer twist, which reduces scratchiness. The fleece is the sturdiest of the longwools; coarse, large, and heavy.

Fleece weight: 6.5-11 kg

Fibre diameter: 33-41 μm

Staple length: 18-20 cm



ROMNEY Critical Conservation Breed

Romney sheep evolved in the 13th century and are named for Romney Marsh, a saltmarsh in Kent, England, that experiences humid, boggy, damp conditions. Romney is a rugged, adaptable dual-purpose sheep. Romney wool comes in a range of natural colours, including white, grey, brown, and black. Due to its low lanolin content, it produces a high yield after skirting and scouring or can be spun in the grease. Romney locks are dense and semi-lustrous, with a uniform well-defined crimp. The fibre's bounce and high crimp makes it amenable to both woolen and worsted spinning and is considered by fibre artists to be highly pleasurable to work with.

Fleece weight: 4.5 kg

Fibre diameter: 31-36 μm

Staple length: 15-20 cm



WENSLEYDALE Critical Conservation Breed

Wensleydale sheep originated in North Yorkshire, England and can be traced back to a single sheep named Blue Cap, born in 1839, to a Leicester ram and a Teeswater ewe. Wensleydales are the largest of the Longwool breeds and their fibre is highly valued. The fleece colours are white, grey, and black with exceptional lustre and are often kemp free. A lock of Wensleydale fibre is very long, with a few S-shaped crimps per centimetre. The fibre is usually spun worsted to produce lustrous, drapery fabrics. Wensleydales have modest felting abilities and can add texture to a felted project.

Fleece weight: 5-9 kg

Fibre diameter: 33-35 μm

Staple length: 20-30 cm

Stages of Wool Processing

Step 1.



Shearing

Shearing is the process of removing wool from fibre-producing animals. Shearing most commonly refers to the removal of sheep's fleece however, goats, camelids and rabbits also need to be shorn. Sheep are shorn once or twice per year. A trained shearer typically starts with the belly, moving to the flank, rear legs, and finally the top knot. The fleece on these areas tends to be composted or discarded because it is unusable. The prized outer legs and back are then shorn in one piece and set aside for skirting.

Step 2.



Skirting

Skirting is the first step in cleaning fibre after it has been shorn. Shorn, dry fleece is spread flat on a slatted table or mesh screen and checked for any obvious imperfections. These include dung tags or matted areas, britch wool, and excessive vegetable matter. These are removed and composted or discarded in order to preserve the most useable fibres for textile processing. During skirting, the entire fleece is carefully worked from all angles. There is currently no way to mechanize this process and it is done by hand.

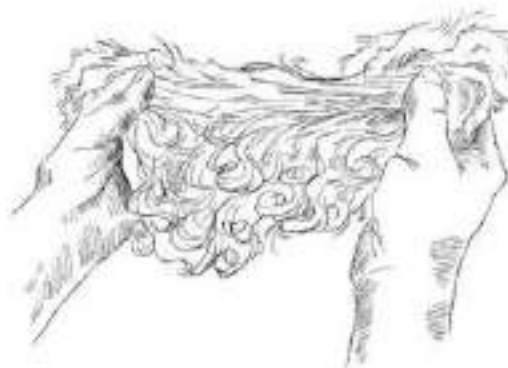
Step 3.



Scouring

Scouring is the process of washing and cleaning fleece in preparation for further processing. The goal of scouring is to remove excess lanolin (grease) and suint (salt and sweat) from the wool in order to make it more workable for further processing. There are different techniques for scouring wool, from the fermented suint method to using industrial washing machines that require multiple cycles of hot water, gentle detergents, and slight agitation. After scouring, wool must be thoroughly dried.

Step 4.



Picking

Picking describes the process of breaking apart wool locks after scouring in preparation for carding and spinning. During this process, more vegetable matter is removed and fibres are separated to become a fluffy, open mass of fibres, free of any clumps that remain held together. There are various types of picking tools including small hand tools and large industrial machines. Picking can also be done by hand.

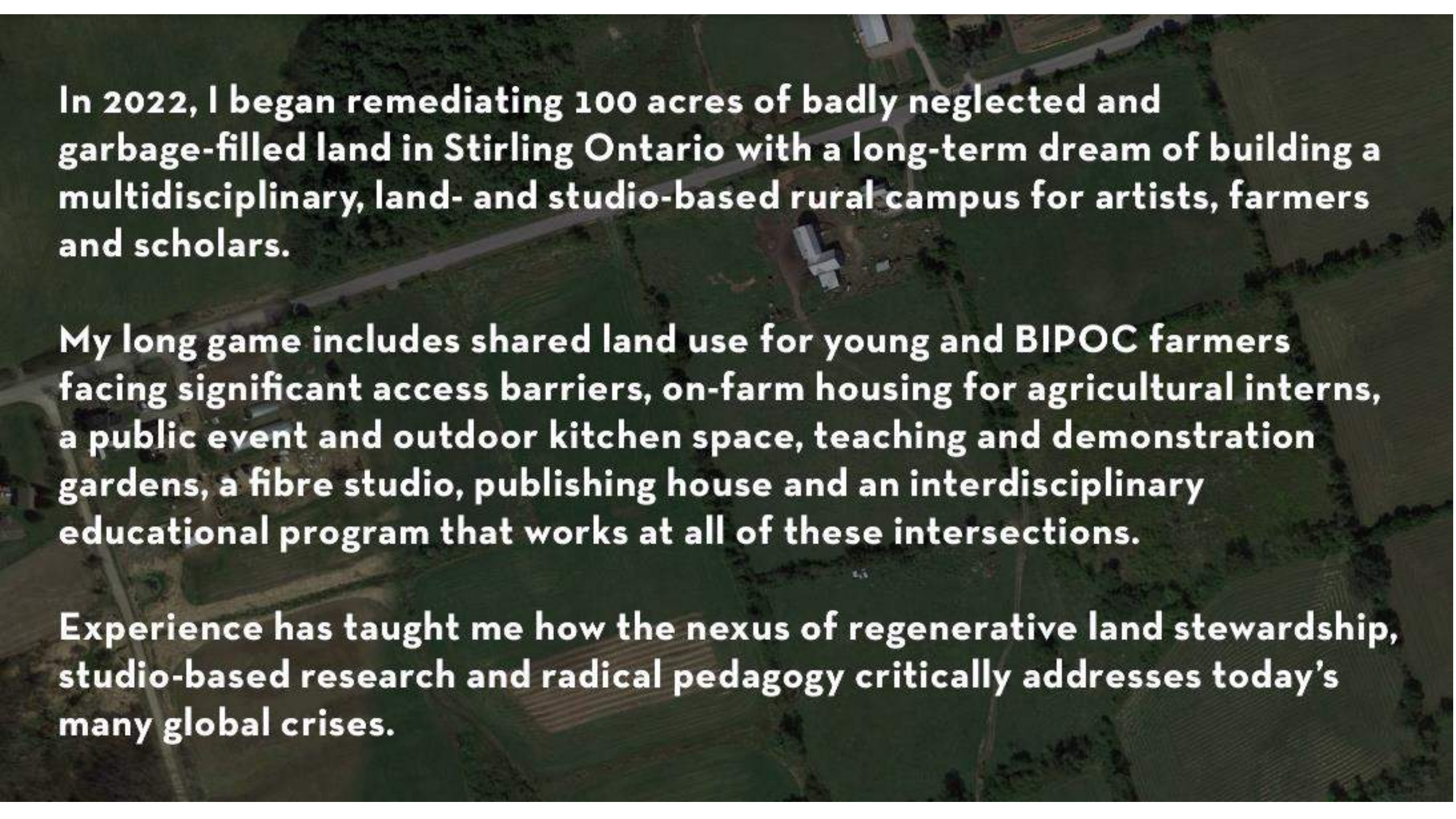
THANK
you

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@FLAXMOBILE ON IG



PLANT PARENTHOOD

SHANNON GERARD

An aerial photograph of a rural landscape. The image shows a mix of green fields, some with visible furrows, and clusters of trees. A small, light-colored building with a dark roof is situated in the upper-middle part of the frame. A road or path runs diagonally across the scene. The overall tone is somewhat muted, with a dark overlay that makes the white text stand out.

In 2022, I began remediating 100 acres of badly neglected and garbage-filled land in Stirling Ontario with a long-term dream of building a multidisciplinary, land- and studio-based rural campus for artists, farmers and scholars.

My long game includes shared land use for young and BIPOC farmers facing significant access barriers, on-farm housing for agricultural interns, a public event and outdoor kitchen space, teaching and demonstration gardens, a fibre studio, publishing house and an interdisciplinary educational program that works at all of these intersections.

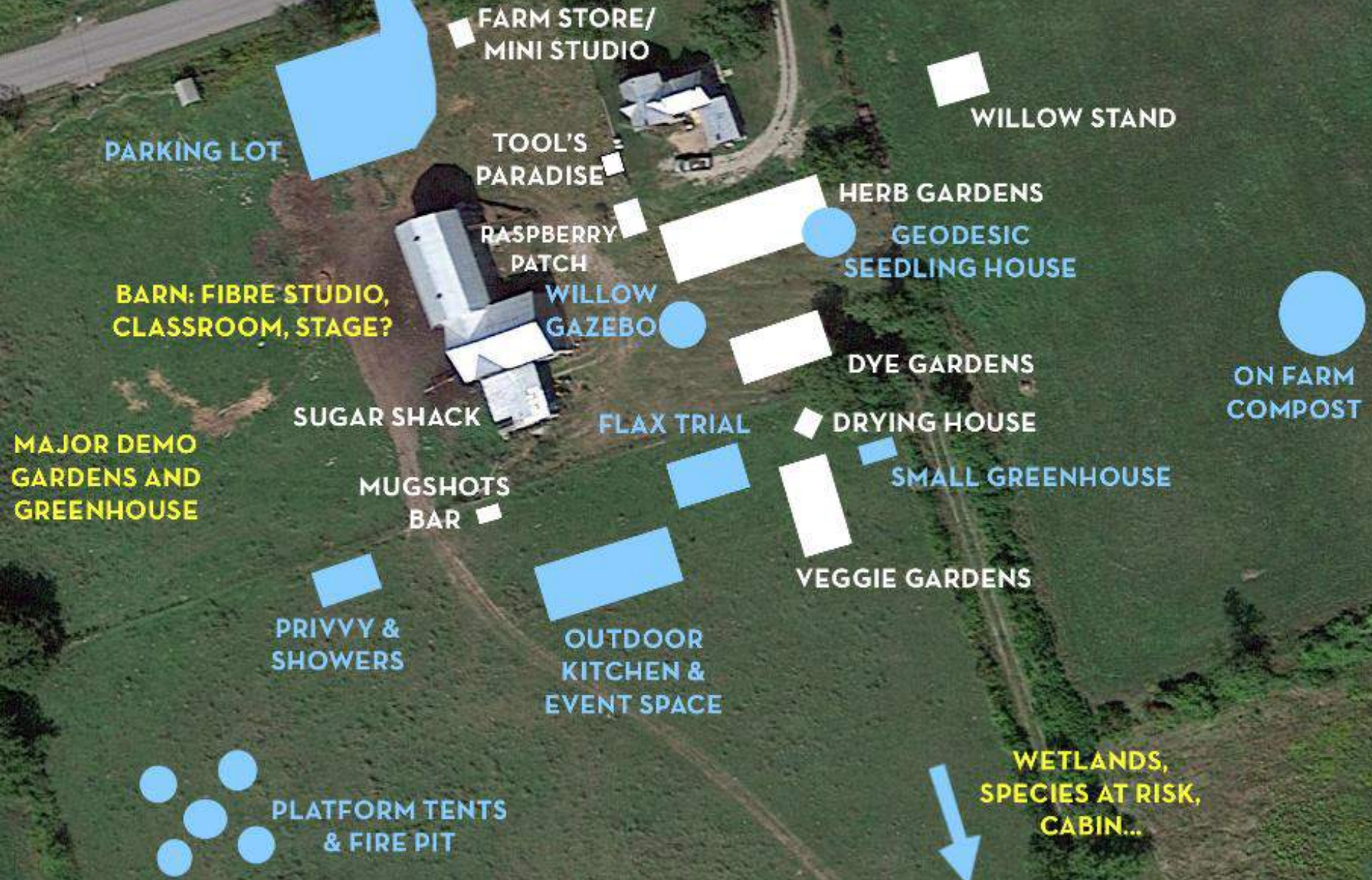
Experience has taught me how the nexus of regenerative land stewardship, studio-based research and radical pedagogy critically addresses today's many global crises.



smallspadefarm



PLANT PARENTHOOD PLANS



What do farming and printmaking have in common? The shared political imperative of public participation.



**Plant Parenthood
is a farm, a publishing
house and a classroom
with an emphasis on
radical seed saving,
cooperative programming,
regional adaptation of
diasporic food and social justice.**

**TEACHING &
DEMONSTRATION
GARDENS**







A large, rectangular piece of bright yellow fabric is hanging from a line, secured by several wooden clothespins along its top edge. The fabric is wrinkled and appears to be drying in the sun. In the background, there is a rustic wooden building with weathered siding and a pile of lumber. To the left, there are green bushes and a wooden fence. The overall scene is outdoors, likely in a garden or yard.

**DYE GARDENS &
FIBRE STUDIO**





PRINT WORKSHOPS

The image shows a collection of white t-shirts hanging on a clothesline. Each shirt features a different botanical print, including leaves, stems, and small flowers. The prints are in various colors, such as brown, green, and yellow. The shirts are hanging in front of a wooden structure, possibly a pergola or a fence, with some foliage visible in the background. The text 'PRINT WORKSHOPS' is overlaid in the center of the image in a large, white, bold font.



A close-up photograph of a person's open palm holding a large number of small, dark, teardrop-shaped seeds. The seeds are piled in the center of the palm, with some spilling towards the fingers. The background is the skin of the hand, showing natural creases and texture. The lighting is soft and even.

SEED SAVING





FOOD IN DIASPORA









Welcome to Sustainable Colour Lab

The OCADU Sustainable Colour Lab is a registered laboratory for artists and designers to create and document sustainable pigments in the area of natural colour research.



FARMER-LED RESEARCH

EFAO's Farmer-Led Research Program helps farmers combine their curiosity with scientific rigour to answer their most challenging on-farm questions.

Since 2016 when EFAO launched the Farmer-Led Research Program, more than 80 different farmers have received funding and support to conduct over 125 trials for their farms, and shared results freely with others at field days, workshops, research roundtables and Symposia.

ART FARM

Works by Futurefarmers, Shannon Gerard & Outdoor School
Curated by Amish Morrell

Activated with Ate Kay's Farm, Alexandra Gelis & It's Giving Farm

Art Farm explores the creative, aesthetic, and critical work of farmers, asking us to consider both where and how culture is made. During the exhibition, the gallery operates as a living site for building relationships between urban farmers, campus communities, and our wider Scarborough audience. *Art Farm* is activated through a series of workshops, events, and talks framed by three core artist projects: *Plant Parenthood*, an active classroom and print studio by artist, educator, and farmer, Shannon Gerard; *Art Farm Stand*, a mobile sculpture by the Toronto-based collective Outdoor School; and *Soil Procession: A Movement of Soil from the Country to the City*, documentation of a 2015 performance by the international artist collective Futurefarmers.

Art Farm is a site for collaboration and exchange—where artists and farmers resist mainstream agricultural and economic systems, and the environmental and social injustices that can be perpetuated by them. They model new—and old—ways of land stewardship, and of coming together to share food, knowledge, stories, and ceremony. Students and members of the public are invited to participate in the workings of Gerard's print studio and in events at the *Art Farm Stand*, developed with artists and farmers including It's Giving Farm in the Rouge Valley, Ate Kay's Farm in Tkaronto, and Colombian-Venezuelan artist Alexandra Gelis, to generate material that will grow and accumulate throughout the exhibition.

This exhibition acknowledges the vital intellectual, critical, and creative work that farmers and artists do, forms of alternative world-making that includes activism, education, and nourishment. Their lives and work constitute a rich creative counterculture that resists mainstream industrial agricultural practices, and often art galleries themselves, but deepen our relations to the other-than-human, to the land, and to one another.

Explore More



EVENT
ART FARM @ U OF T SCARBOROUGH COMMUNITY MARKET
September 12, 2024 - 12 - 5 pm



EVENT
GETTING TO KNOW SEEDS WITH ATE KAY'S FARM
September 25, 2024 - 12 - 1 pm



EVENT
OPEN PRINT STUDIO WITH SHANNON GERARD
September 28, 2024 - 12 - 3 pm



EVENT
SCARBOROUGH MYCOLOGICAL FORAY
October 5, 2024 - 10 am - 1 pm



EVENT
BOTANICAL ART BUS TOUR
October 19, 2024 - 12 - 5:30 pm







themeshworks –

Nicole Klenk

295 posts · 342 followers · 2,305 following

Textile art craft, embodied-affective-imaginative-land-based knowledge and pedagogy. Botanist turned... more



Followed by prickly_pear_nation_studio, nithikul_nimkulrat + 3 more

Following ▾

Message



Hand 1: Hand spinning cotton from a ball of Merino. From the series "Hand 1: Hand spinning cotton from a ball of Merino." (2019) by Nicole Klenk. Photo by Nicole Klenk. Photo by Nicole Klenk.







The Global Centre for Climate Action
BMO Climate Action Speaker Series



Discussion and Q&A

Generously supported by:



Background photo supplied by Jennifer Green

Future GCCA Events

Sign up for updates!



The Global Centre for Climate Action
BMO Climate Action Speaker Series
April 1, 2026
6:30 - 8:00pm
OCAD University, 205 Richmond Street West
RHA 420

Circularity by Design

Join Peter Jones, Head of Sustainability, IKEA Canada, one of the world's leading retailers, with Ranees Lee, an academic innovator and Rebecca Wakefield, an early career researcher as they grapple with the very real challenges and opportunities that define a truly circular economy.


Ranees Lee
Associate Professor
Industrial Design
OCAD University


Peter Jones
Head of Sustainability
IKEA Canada


Rebecca Wakefield
Student
Industrial Design
OCAD University

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Photo courtesy of IKEA Canada

The Global Centre for Climate Action
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