



Latournell 2025:

Agroecology and Conservation:
Toward building a natural alliance

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Educator & consultant for

- **Soil Health and Ecosystem Restoration**
- **Regenerative Agriculture and food systems**
- **Holistic Management and Regenerative Design**
- **Climate resilience and biosphere regeneration**
- **Living Landscape Narrative**

For diverse audiences.



BLOG

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Dr. Thorsten Arnold

**MSc Earth System Science –
PhD Climate and Watershed Resilience
Ecosystem restoration & Land grants**

In Grey Bruce, ecosystem functions are changing with incredible speed



Jackson, along HWY21



*The year is 2025 A.C.
North American
farmers have
entirely surrendered
to yield
maximization at all
cost.*

Well, not entirely...

*One small group of
indomitable farmers
still holds out
against
ecosystem
destruction.*

Persephone Market Garden



How we grow?

Intercropping, small-scale, biointensive

- Plants arranged with supportive neighbours
- Balance air flow, sun exposure,
- Makes use of crop rotation, mulching, cover crops





Persephone Market Garden, Photos by Kristine Hammel

Breathing life into health – with CARE



Regenerative principles:

1. **Limit Disturbance** – Minimize tillage and synthetic inputs to preserve soil biology.
2. **Keep Soil Covered** – Protect the soil with mulch, cover crops, and plant residues.
3. **Maintain Living Roots** – Ensure plants continue feeding soil microbes year-round.
4. **Encourage Diversity** – Increase plant species diversity to support a resilient ecosystem.
5. **Integrate Livestock** – Reintroduce animals into agricultural systems to enhance nutrient cycling and microbial health.
6. **Holism** – Recognizing that human health, soil health, plant health, and farm ecology are interdependent and must be managed as an integrated system rather than isolated parts.

Breathing life into health – with lots of care

Regenerative practices:

- 7 years of no-till veggies
- organic and agroecological pest management only
- Intercropping for diversity
- Cover crops, straw mulch
- Perennial Pollinator Strips
- Wetland Restoration



A new-dug pond (Spring 2020)



Ecosystem recovery, 2023



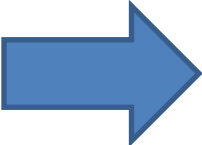
A dry June, 2025



Excellent health outcomes

Soil, plants, farm

- Excellent water retention and drought resistance
- Plants express lipid layer & full immunity.
- Significantly reduced pest & weed pressure
- Earliest and best harvests in years (despite increasingly difficult weather conditions)
- Excellent crop yields and quality (taste, storage)

 **Climate resilience possible,
requires re-thinking the entire system.**





WHAT IF –

Ontario's farmland was
as biodiverse as its parks?

- **What is agroecology?**
 - A practice, science, and movement
 - Ecosystem design for resilient human yields
- **Agroecological strategies:**
 - Diversity for resilience, soil regeneration, water retention, pest-predator relationships, ecosystem functions

(working) definitions

Conservation

Protection & management of natural resources & biodiversity to sustain ecological functions and species.

Ecological functions as a ***goal***

Agroecology

An agricultural design & strategy that integrates ecological principles, utilizes ecological functions and cultural knowledge, builds social equity, to sustainable farming & food systems.

Ecological functions as a ***pathway***

	Conservation	Agroecology
Goals	Biodiversity protection, ecosystem resilience, climate adaptation.	•Food production, sustainable livelihoods, system resilience
Strategy	Land protection, restricted land access and land use, education, narrative	• Biodiversity, ecosystem resilience, climate adaptation. •Land access, education, narrative
Values	Stewardship, sustainability, intergenerational responsibility, respect for ecological limits, community well-being.	•Stewardship, sustainability, intergenerational responsibility, respect for ecological limits, community well-being.
Associated Disciplines	Ecology, wildlife biology, natural resource management, environmental science.	•Agronomy, rural sociology, food systems research, ecology, environmental science.
Policy Departments	Ministries of Environment, Parks and Wildlife, Natural Resources.	•Ministries of Agriculture, Rural Development, Food.

Agroecology

Dimension	Description
A practice	On-the-ground farming methods that work with ecological processes: crop diversity, agroforestry, soil regeneration, integrated pest management, water retention.
A science	Interdisciplinary research linking agronomy, ecology, and social sciences to study farming systems in their environmental, economic, and cultural context.
A social movement	A global network advocating for food sovereignty, farmer rights, climate justice, and the transformation of food systems toward equity and sustainability.

Core principles of Agroecology

1. **Diversity** in crops, livestock, and ecosystem functions
2. **Synergies** between different components of the agroecosystem
3. **Efficiency** in resource use and nutrient cycling
4. **Resilience** to climate and market shocks
5. **Sharing** and co-creation of knowledge
6. **Human and social values**, equity, and fairness
7. **Culture** and food traditions
8. **Responsible governance** of land, water, and biodiversity
9. Circular and solidarity **economy**

International Organizations

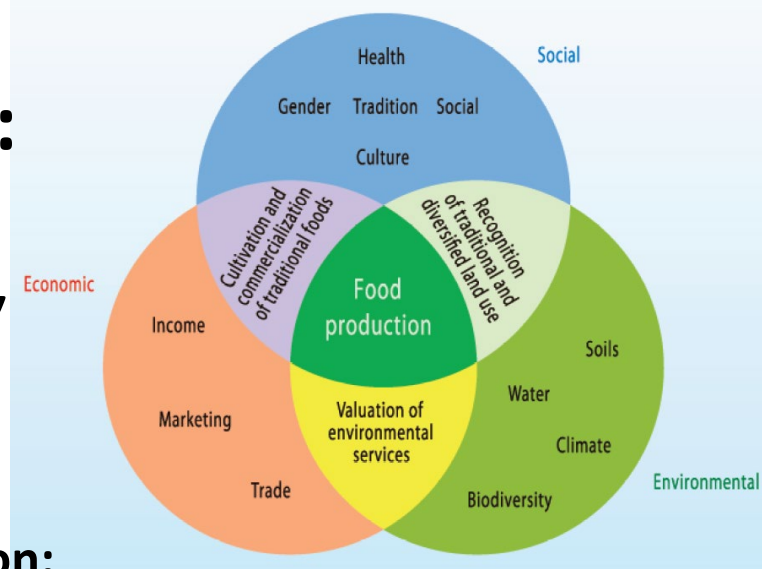
Conservation

- **International Union for Conservation of Nature (IUCN)**
- **United Nations Environmental Program (UNEP)**
- **World Wide Fund for Nature (WWF)**
- **The Nature Conservancy (TNC)**
- **Conservation International (CI)**
- **BirdLife International**

Agroecology

- **La Via Campesina**
- **United Nations Food and Agriculture Organization (UN-FAO)**
- **International Panel of Experts on Sustainable Food Systems (IPES-Food)**
- **Sociedad Científica Latinoamericana de Agroecología (SOCLA)**
- **International Federation of Organic Ag Movements (IFOAM – Organics International)**
- **Regeneration International**

The UN Agriculture Assessment: *International Assessment of Agricultural Science and Technology for Development (IAASTD)*



> In Agriculture, Business as usual is not an option:

- “Over the last century, the agricultural sector has typically **simplified production systems to maximize the harvest of a single component** (...) this has often led to degradation of environmental and natural resources.”

(Global Summary, p. 21)

- A **holistic, or systems-oriented approach**, is preferable because it can address the difficult issues associated with the complexity of food and other production systems in different ecologies, locations and cultures.”
- “Agriculture operates within complex systems and is multifunctional in its nature. (...) The **concept of multifunctionality** recognizes agriculture as a multi-output activity producing not only commodities, but also non-commodity outputs such as environmental services, landscape amenities and cultural heritages.”

(Global Summary, Key Finding 6 and box on multifunctionality, p. 9)

Conservation

- Protected areas,
- Wildlife management,
- Watershed & wetland restoration
- Habitat restoration,
 - Species recovery,
- Ecosystem monitoring.

OUTCOMES

- Biodiversity protection & recovery,
- Climate resilience,
- Healthy soil-water cycle,
- Human & ecosystem health
 - Stewardship ethics,
 - Intergenerational equity

PRINCIPLES

- **Regeneration, not extraction**
 - Community stewardship
 - System thinking & holism
 - Science & indigenous knowledge
 - Reciprocity & care

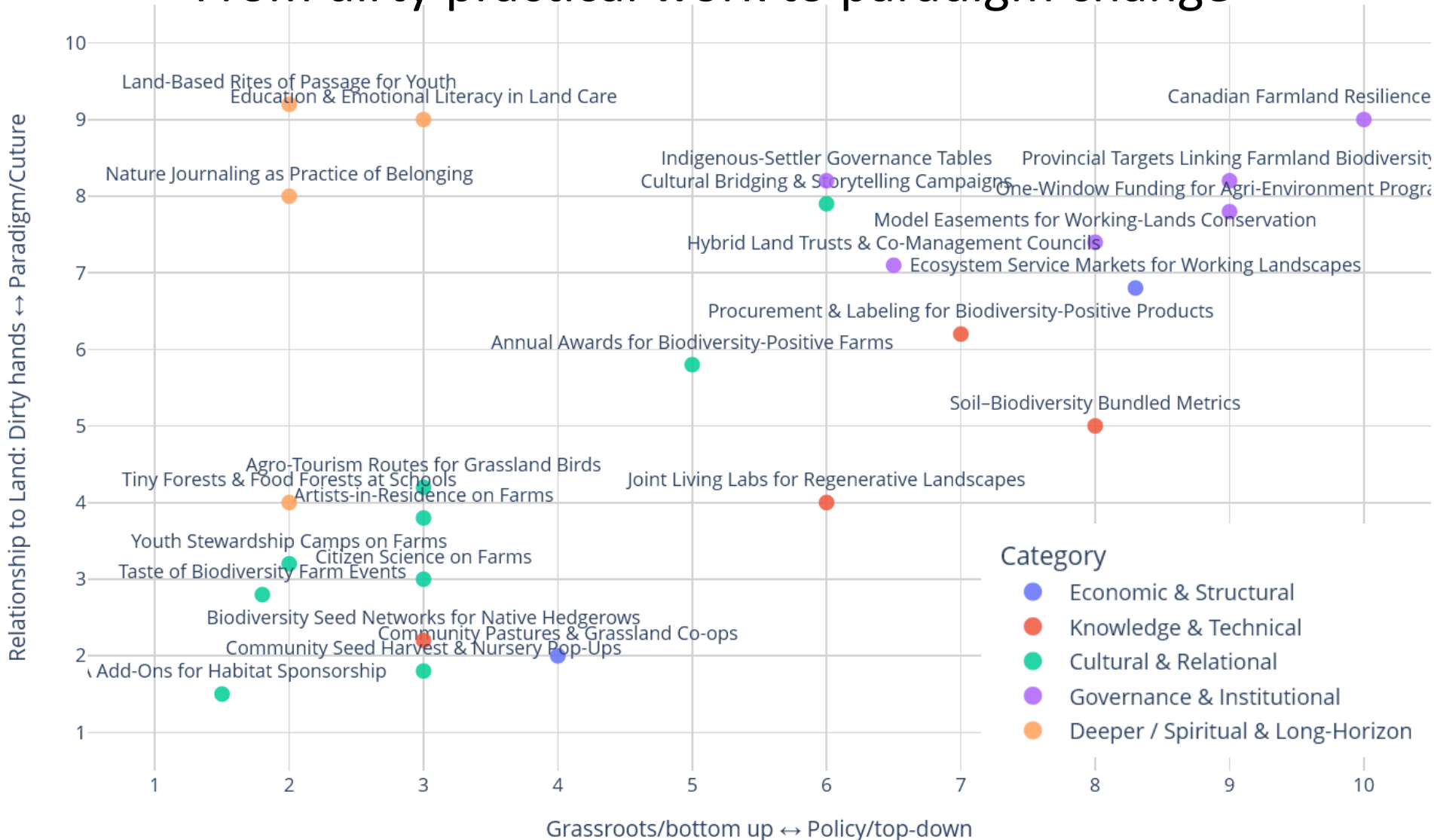
Agroecology

- Food sovereignty,
- Farmer-led research,
- Agroecosystem diversity,
- Eco-Certification
- Local food systems,
- Cultural food traditions.

Lots of ideas how to synergize

From grassroots to policy,

From dirty practical work to paradigm change



SOME EXAMPLE FARMING SYSTEMS

Keyline design for runoff control

- Furrows in fields channel water against contour line, thus improving infiltration and water retention

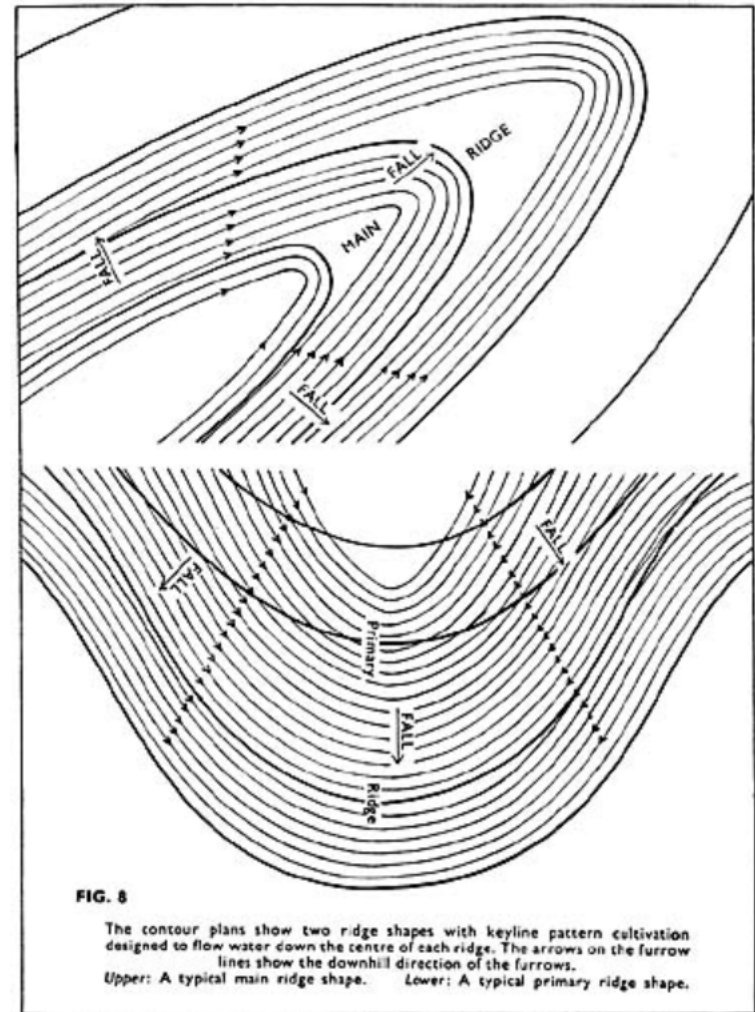


FIG. 8
The contour plans show two ridge shapes with keyline pattern cultivation designed to flow water down the centre of each ridge. The arrows on the furrow lines show the downhill direction of the furrows.
Upper: A typical main ridge shape. Lower: A typical primary ridge shape.

Source: Yeomans, Keyline Design

Landscape design for microclimate control

- Change heat retention capacity along sun-exposed slopes
- Hold water

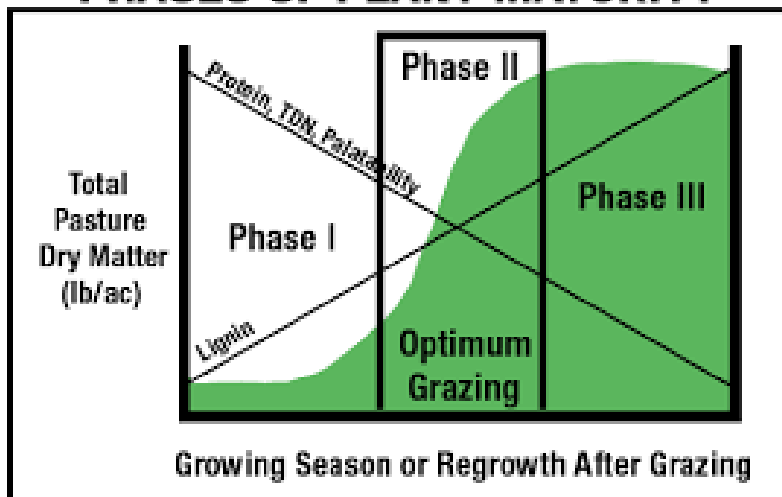


Regenerative grazing

- Crowding forces livestock to radically graze down small area.
- Rotation allows rest, and rapid renewal of pasture.
- Soil building and massive carbon storage



PHASES OF PLANT MATURITY



Intercropping

- Plants arranged with supportive neighbours
- Maximize air flow, sun exposure,
- Makes use of crop rotation, mulching, cover crops

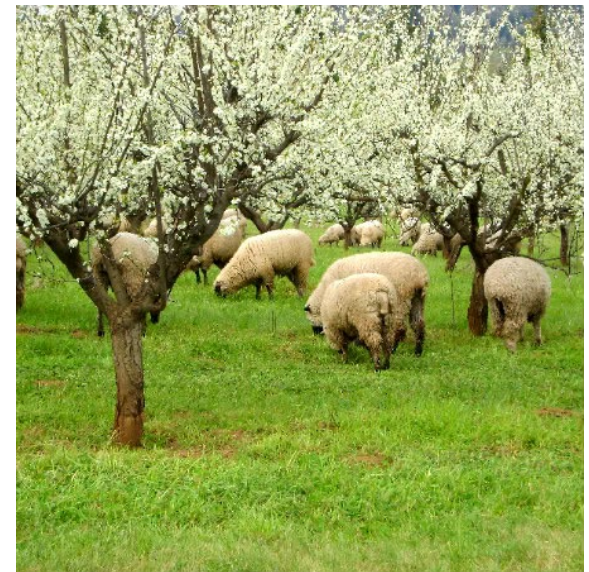


Alley Cropping of trees & annuals

- Agroforestry practice where agricultural or horticultural crops are grown in the alleyways between widely spaced rows of woody plants
 - **Diversification of income**
 - **Improved soil health**
 - **Improved crop health**



Integrated livestock-crop systems



Synopsis

- Agroecology is not a BMP, but a systems approach.
- Farmers cannot integrate AE practices one at a time – they need to adopt **AE management**
- All practices are allowed – if intended outcomes are achieved.
- Restoring ecosystem functions is not a primary goal, but a pathway to achieve farm resilience.