Agroecology

เกษตรนิเวศ

Kaset niwet

and Agriculture in the Coming Decade

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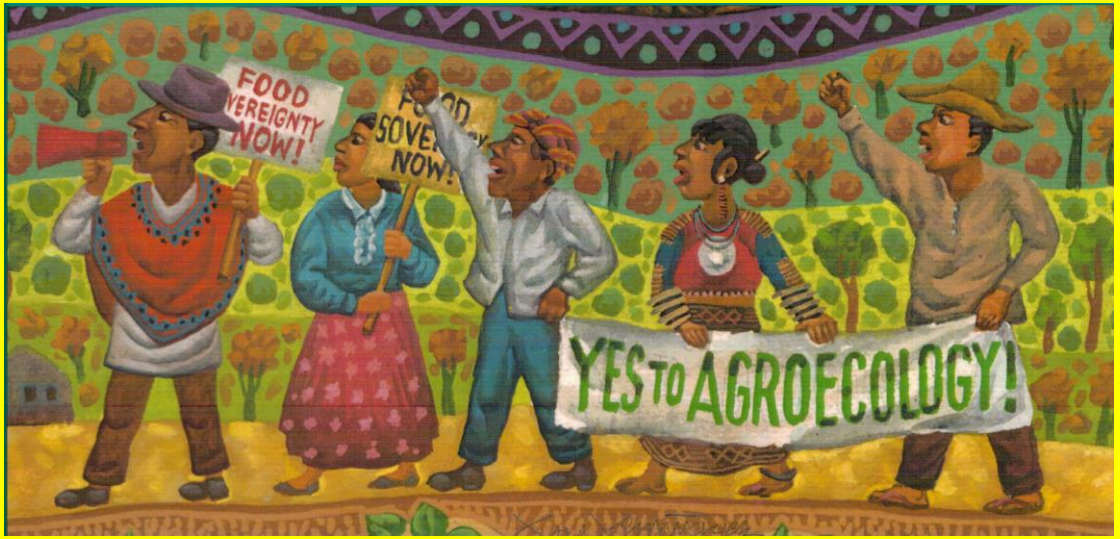
Agroecology เกษตรนิเวศ

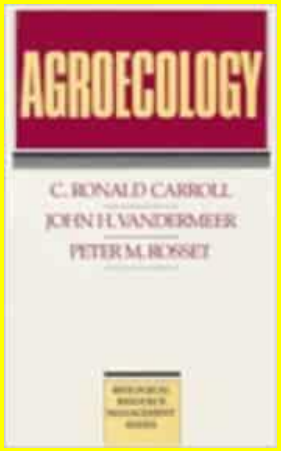
Kaset niwet

"the scientific basis of sustainable agriculture"

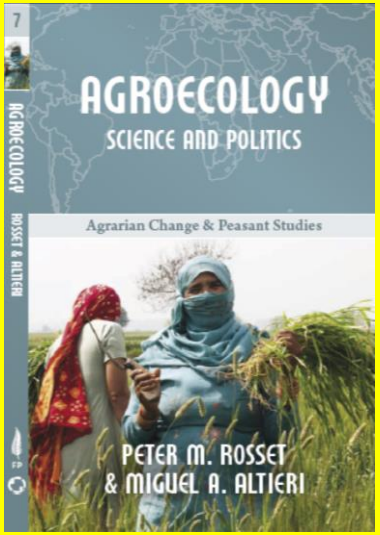
- The inter- and trans-disciplinary **science** of how agricultural systems work. And the scientific basis for the design and study of more sustainable systems
- The agricultural **practices** that permit farming that is more sustainable and that does not use chemicals or GMOs ["organic" is just a market term]
- The global social **movement** to transform agriculture.



1990



2017



Principles of Agroecology

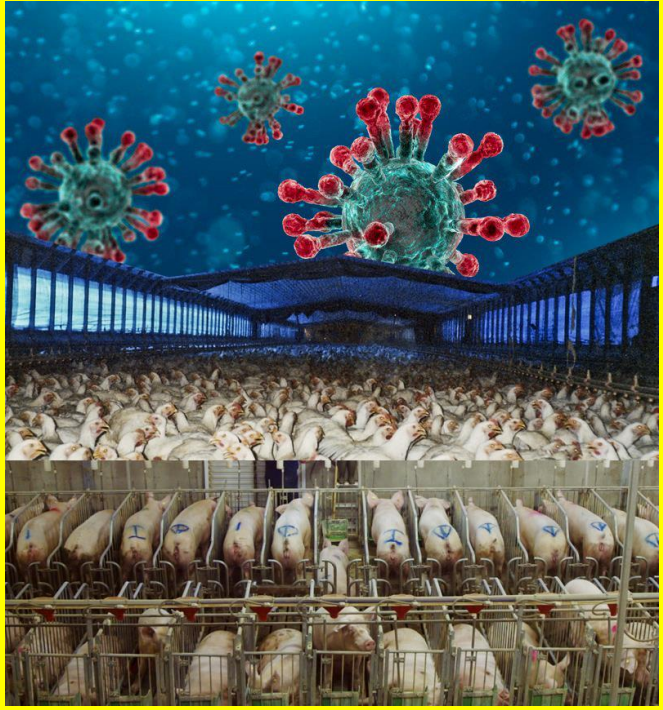
- **Promote the recycling of biomass and balanced nutrient flows**
- **Secure favorable soil conditions: high organic matter content and soil biology**
- **Minimize the loss of resources (biomass, nutrients, water, etc.) though a more closed rather than open system**
- **Species and genetic diversification at field and landscape level**
- **Enhance biological interactions and synergisms between components**
- **SOCIAL ORGANIZATION AND PROCESS**

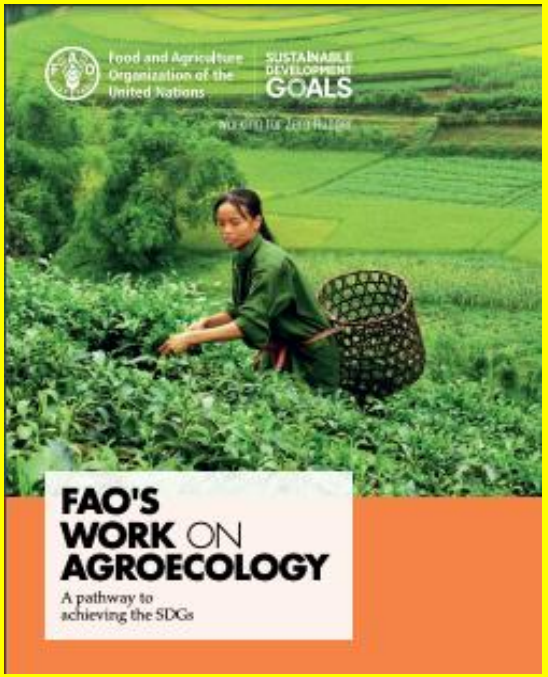
FIGURE 2 - FAO'S 10 ELEMENTS OF AGROECOLOGY

(Source: FAO, 2018a)

Major Challenges

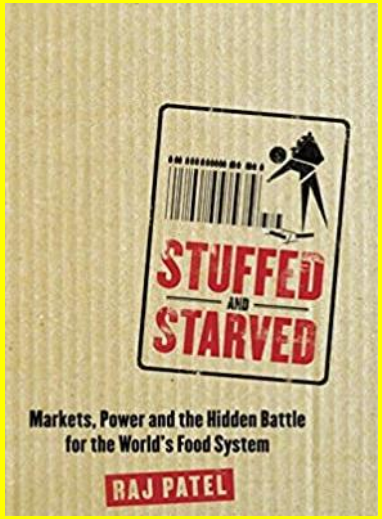
- GLOBAL HEALTH: Covid and Post-Covid recovery and transformation
- Climate change and biodiversity
- Sustainability of productive resources
- Farmer livelihoods
- SDG Goals





Covid and the Food System

- Unhealthy diets heavy on industrial processed food ➔ COVID Comorbidities: malnourishment, obesity, diabetes, heart disease, certain cancers, etc.
- **AGROECOLOGY PRODUCES HEALTHY FOOD**



THE FOOD SYSTEM AND THE CAUSES OF COVID

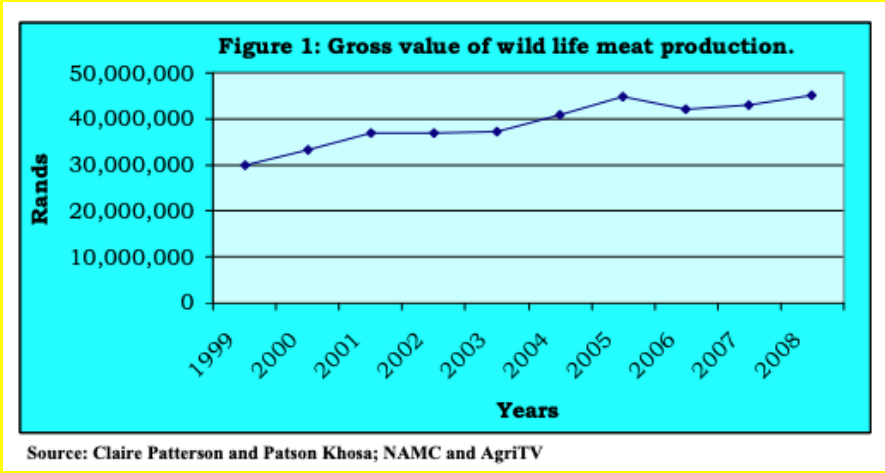
The Industrial Livestock System is widely blamed for earlier pandemics and illnesses: swine flu, avian flu, Salmonella E. coli, etc.

Causes of COVID: 3 Hypotheses

1. Jumped from wildlife to humans due to forest encroachment by monoculture for livestock feed
2. Arose from industrial corporate farming of wild animal meats
3. Escaped from a laboratory carrying out "gain of function" research on viruses, in order to develop more powerful vaccines (funded by livestock agribusiness), or bioweapons (funded by the Pentagon)

Maize monoculture for livestock feed

Emerging Wild Meat Value Chain



INDUSTRIAL MEAT COMPLEX
Global Livestock Industry
Global Livestock Feed Industry

Unhealthy food

- Antibiotics
- Growth hormones
- Meat with more bad cholesterol and less good cholesterol

Involved in the emergence of COVID

- Industrial production of wild meat
- Deforestation for production of livestock feed
- Funding of virus ”Gain of Function” research (EcoHealth Alliance)

The key driver of the conversion of shifting cultivation and forest into chemical monoculture

- Maize in SE Asia
- Soybeans in the Americas

Produces disease, MAKES US SICK

- Swine flu
- Bird flu
- Salmonella
- E. coli
- Heart disease

Driving the transformation of landscapes and communities

- Deforestation
- Soil erosion
- Moving people into economic dependence
- Massive indebtedness (>20 more in Nan)

A key driver of burning of fields and forests – PM 2.5 air pollution – MAKES US MORE SICK

- SE Asia
- Brazil

The Solution: Agroecological Small-Farm production of livestock, crops and agroforestry systems

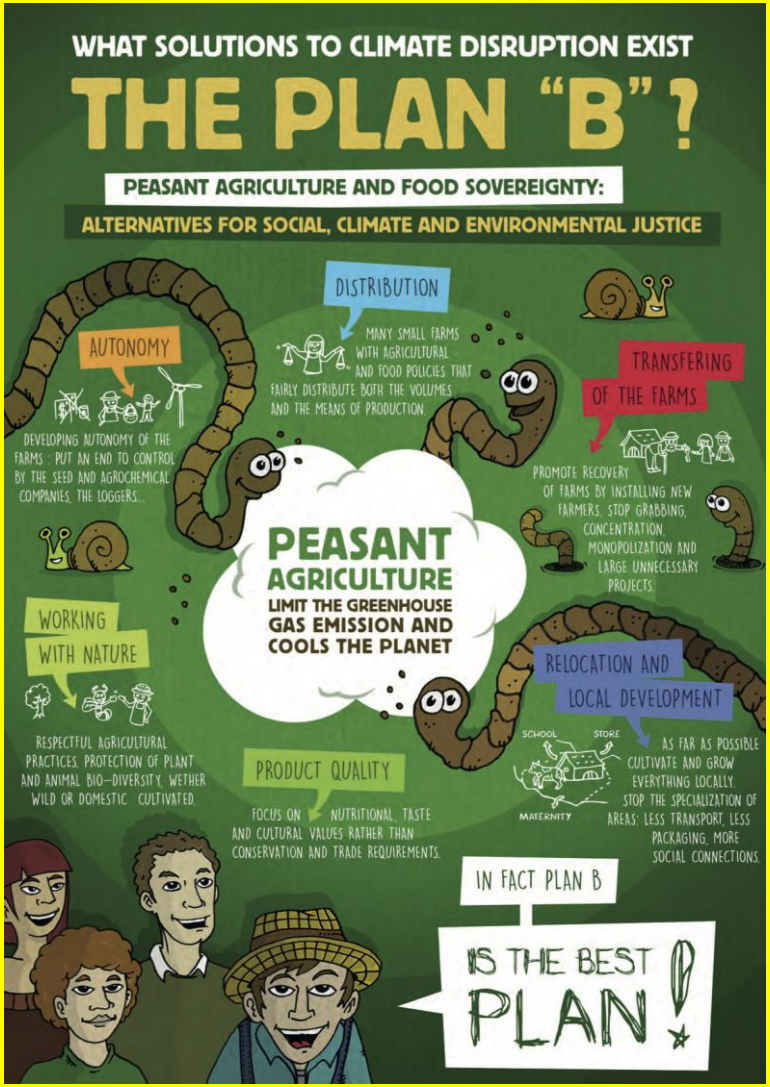
Can small farms produce enough meat?

In the USA, one factory farm of pigs, which produces 200,000 pigs per year, puts 4,000 integrated small farms with 50 pigs each out of business

- **The manure generates greenhouse gas**
- **Feed produced in distant monocultures**

- **Manure used as fertilizer**
- **Grow their own feed**

Climate Change, Climate Events, Biodiversity, and Agroecology



Contribution of the globalized, industrial corporate food system to climate change

- Agricultural activities are responsible for **11 to 15%**
- Land clearing and deforestation cause and additional **15 to 18%**
- Food processing, packing and transportation cause **15 to 20%**
- Decomposition of organic waste: **3 to 4%**

Total emissions of the food system: 44 to 57% of total global greenhouse emissions

Industrial ag production itself (land clearing and monocultures, pesticides, machinery, etc.)

…. Shipping around the world, processing, wasteful packaging…

REAL MITIGATION

- **Agroecology eliminates the emissions from agrochemicals and actually sequesters carbon from the atmosphere**
- **Small-scale production reduces emissions from machinery**
- **Local or at least national production reduces emissions from long-distance transport**
- **Traditional communities conserve and defend the forests in their territories, this reduces emissions from forest clearing**

MITIGATION

Peasant-led Agroecology and Food Sovereignty have the Potential to Eliminate 30% to 75% of total emissions.

- **Recovery of soil organic matter: 20 – 35%**

- **Animal production in integrated farming systems instead of industrial feedlots and factory farms: 5 – 9%**

- **Local markets and fresh food: 10 – 12 %**

- **A halt to forest clearing for industrial plantations: 15 – 18 %**

ADAPTATION

Peasant-based agroecology is ADAPTIVE agriculture

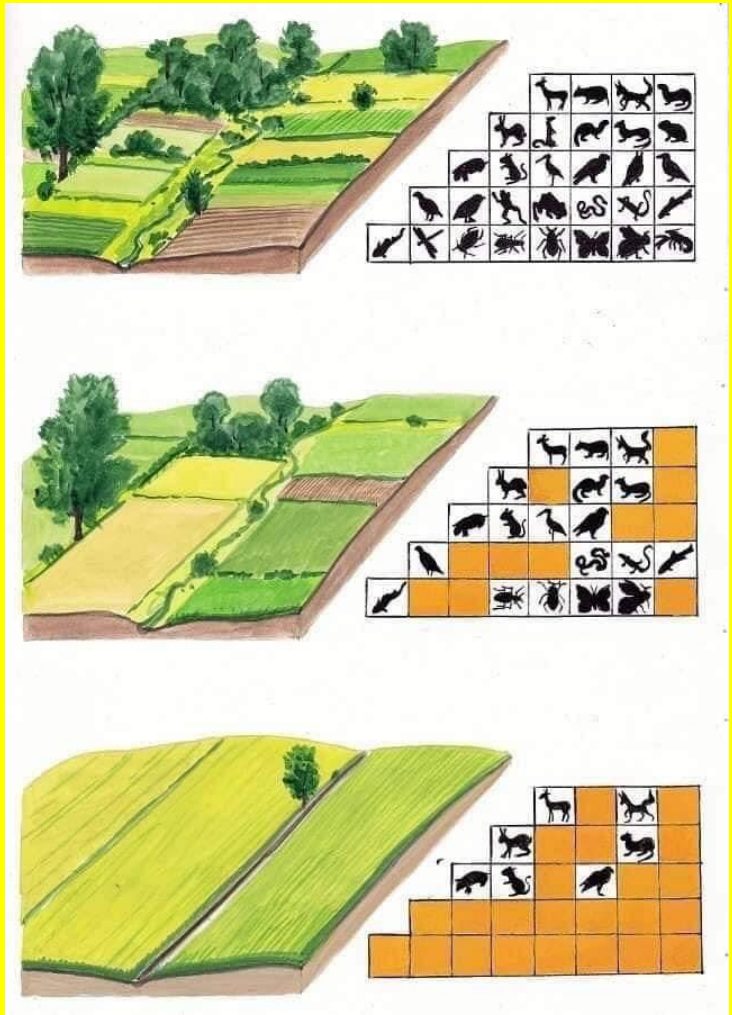
- **The genetic diversity of peasant seeds allows crop varieties to evolve along with a changing climate**

- **When temperatures rise, we can use shade trees, cover crops and mulch to lower the soil temperature**

- **When our regions become more arid, we can use more organic matter in the soil and ground cover to hold water, and water harvesting practices**

- **Etc.**

BIODIVERSITY
What kind of agriculture?



Agroecology and Sustainable Development Goals (SDGs)

Figure 4: Causal diagram explaining the impact of the principles of agroecology and their interventions in the AE scenario on the SDGs

But a major challenge remains:

How to bring agroecology to scale

…such that it is practiced by ever more families, over ever larger territories

A question asked by FAO

Scaling up and scaling out

key roles for peasant and family farmer organizations and social movements

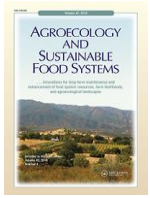
Evidence-based analysis of successful cases of scaling

The Journal of Peasant Studies
Vol. 38, No. 1, January 2011, 161–191

Routledge
Taylor & Francis Group

The *Campesino*-to-*Campesino* agroecology movement of ANAP in Cuba: social process methodology in the construction of sustainable peasant agriculture and food sovereignty

Peter Michael Rosset, Braulio Machín Sosa, Adilén María Roque Jaime and Dana Rocío Ávila Lozano

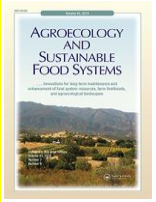


Agroecology and Sustainable Food Systems

ISSN: 2168-3565 (Print) 2168-3573 (Online) Journal homepage: http://www.tandfonline.com/loi/wjsa21

Bringing agroecology to scale: key drivers and emblematic cases

Mateo Mier y Terán Giménez Cacho, Omar Felipe Giraldo, Miriam Aldasoro, Helda Morales, Bruce G. Ferguson, Peter Rosset, Ashlesha Khadse & Carmen Campos



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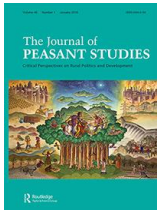
Agroecology and La Via Campesina I. The symbolic and material construction of agroecology through the dispositive of "peasant-to-peasant" processes

Valentín Val, Peter M. Rosset, Carla Zamora Lomelí, Omar Felipe Giraldo & Dianne Rocheleau



The Journal of Peasant Studies

ISSN: 0306-6150 (Print) 1743-9361 (Online) Journal homepage: http://www.tandfonline.com/loi/fjps20

Taking agroecology to scale: the Zero Budget Natural Farming peasant movement in Karnataka, India

Ashlesha Khadse, Peter Michael Rosset, Helda Morales & Bruce G. Ferguson

Factors in Achieving Scale

- Social organization – farmer movements
- Horizontal social process methodology and pedagogy
- Peasant farmer protagonism
- Farming practices that work
- Motivating discourse and framing
- Political opportunities
- External allies
- Local leaders
- Favorable markets
- Favorable public policies

Conclusion:

Urgent & Necessary to Scale-Up Peasant Agroecology