

Zero Carbon Dorset:  
Land Use  
*From Productionism to Ecology*

Ben Davis

# Productionism

Emphasis on high yields and short-term farm profit, resulting in remarkable returns for some, but too often with an array of negative environmental and social side effects.

# Global Impacts of Agriculture

38%  
global  
land use

25% - 30%  
greenhouse  
gas  
emissions

70% of  
deforestation  
globally results  
from growing  
commercial food  
crops

Industrial  
Agriculture uses  
75% of global  
cultivated land, but  
produces just 30%  
of food

$\frac{1}{3}$  of food  
is wasted  
or lost  
each year

# UK Impacts of Agriculture

70%  
land use

10 - 30%  
UK  
greenhouse  
emissions

12% of farmland  
species are  
threatened with  
extinction from  
Great Britain.

In 2001 over two  
thirds of UK land  
was owned by  
0.36% of the  
population, or  
189,000 families

Farmland birds  
have declined by  
54% since 1970,  
butterflies by  
41% since 1976.

total tree cover of  
the UK landmass  
stands at just  
13%

More than 100,000  
miles of valuable  
hedgerows have  
disappeared

The country has  
lost 84% of its  
fertile topsoil  
since 1850

**£121.0bn**

**The agri-food sector contribution to national Gross Value Added in 2018.**

**4.1m**

**People employed in the agri-food sector in Q4 2018, 14% of GB employment.**

# What are the barriers to farming?

## Economics



- Changes in farm production and food consumption have resulted in social and environmental costs becoming externalised and not incurred by farmers.
- Conventional farming systems 'externalise' the costs of biodiversity loss, eutrophication, etc.
- It is estimated that these external costs amount to over £1.5billion
- Ecological producers, making use of methods and inputs that address these issues, must incur higher labour costs whilst needing to sell at similar prices to conventional producers; thus making them less competitive.
- Only 18% of respondents to the 2017 survey found that profitability was a significant barrier to starting a farm business.

## Environment



- 12% of farmland species are threatened with extinction from Great Britain.
- Farmland birds have declined by 54% since 1970, butterflies by 41% since 1976.
- Only 24% of water bodies in England meet 'good ecological status'.
- Agricultural Intensification affected nearly half of the species studied in the State of Nature Report and it was responsible for nearly a quarter of the total impact on our wildlife.
- The country has lost 84% of its fertile topsoil since 1850, as a result of increasingly intense farming practices, with deep ploughing, rapid crop-rotation and ever-larger fields free of trees allowing the wind and rain to carry away the top layer of soil

# What are the barriers to farming?

## Opportunities



- In 2001 over two thirds of UK land was owned by 0.36% of the population, or 189,000 families
- Between 2000-2010 new farm entrants accounted for just 4% of agricultural land purchasers
- High setup costs for establishing farm businesses
- High cost of rural housing
- Amalgamation of land, meaning a fewer number of predominantly large farms available for purchase.
- A 2017 survey of aspiring farmers in Scotland found that 71% of respondents believe that access to land is a significant barrier.
- The ratio of farm purchase price to average agricultural income is in excess of twenty to one in most parts of the country.

## Housing



- In the 2017 Scottish Survey - 53% of respondents cited access to housing on or near farmland as a significant barrier.
- Current planning legislation should allow a farmer to build a dwelling on their land if the local authority believe the farm business to be financially viable and that there is a need to be on the land around the clock.
- These developments are often granted subject to being 'agriculturally tied' - but many are lived in by non-farmers.
- Planning officers and committee members often have little or no experience of small-scale farm businesses; believing that such farms are not economically viable in the long term and that there is no way of protecting the dwellings from becoming homes to non-farmers

Sumatra Deforestation



Deforested Landscape UK



# Agriculture Bill to boost environment and food production

Landmark legislation to boost productivity and reward environmental improvements in the farming sector for decades to come.

It sets out how farmers and land managers in England will in the future be rewarded with public money for “public goods” – such as better air and water quality, higher animal welfare standards, improved access to the countryside or measures to reduce flooding. This will contribute to the government’s commitment to reaching net zero emissions by 2050, while at the same time, helping to boost farmers’ productivity.

# Ecology

The study of our 'house' - the science of the complex relationships between species within an ecosystem.

# Agroecology

The application of ecological concepts and principles to the design and management of sustainable farmland ecosystems. It provides the knowledge and methodology necessary for developing an agriculture that is environmentally sound, culturally sensitive, socially just and economically viable.

# The 10 Elements of Agroecology



Diversity



Co-creation and sharing of knowledge



Synergies



Efficiency



Recycling



Resilience



Human and social values



Culture and food traditions



Responsible governance



Circular and solidarity economy

# IIED principles of agroecology

## BOX 1: THE CORE PRINCIPLES OF AGROECOLOGY<sup>8</sup>

### Planning:

- Use a holistic approach to the identification, the analysis and the resolution of issues related to farming – the agro-ecosystem is regarded as *ONE* and its health as a whole is valued more than the productivity of single crops.
- Harmonise the farming system with the productive potential and the physical limits of the surrounding landscape.

### Resource use:

- Recycle and optimise the use of nutrients and energy on the farm. In particular:
  - Enhance the recycling of biomass, with a view to optimising organic matter decomposition and nutrient cycling over time.
  - Minimise losses of energy, water, nutrients and genetic resources by enhancing the conservation and regeneration of soil and water resources and of agro-biodiversity.
  - Avoid the unnecessary use of agrochemical and other technologies that adversely affect the environment and human health.
  - Minimise the use of external, non-renewable resources (including fossil fuels).

### Field and landscape management:

- Enhance beneficial biological interactions and synergies among the components of agro-biodiversity, thereby promoting key ecological processes and services, rather than focusing on individual species.
- Diversify species and genetic resources in the agro-ecosystem (i.e. at field and landscape level) over time.
- Strengthen the 'immune system' of agricultural systems by enhancing functional biodiversity (natural enemies, antagonists, etc.); pests and diseases should be managed and prevented rather than controlled.
- Use local crop varieties and livestock breeds so as to enhance genetic diversity and adaptation to changing biotic and environmental conditions.
- Provide the most favourable soil conditions for plant growth, particularly by managing organic matter and by enhancing soil biological activity.

## BOX 2: EXAMPLES OF AGROECOLOGICAL PRACTICES<sup>18</sup>

**Conservation tillage:** no or minimum tillage improves soil structure – including aeration and water infiltration and retention capacity – and organic matter

**Mixing crops in a single plot, such as intercropping and poly-cultures:** biological complementarities improve nutrient and input efficiency, use of space and pest regulation, thus enhancing crop yield stability

**Crop rotation and fallowing:** nutrients are conserved from one season to the next, and the life cycles of insect pests, diseases, and weeds are interrupted

**Cover crops and mulching:** reduce erosion, provide nutrients to the soil and enhance biological control of pests

**Crop-livestock integration,** including aquaculture: allows high biomass output and optimal nutrient recycling, beyond economic diversification

**Integrated nutrient management,** such as use of compost, organic manure and nitrogen-fixing crops: allows the reduction or elimination of the use of chemical fertilisers

**Biological management** of pests, diseases and weeds, such as integrated pest management, push and pull methods and allelopathy: decrease long-term incidence of pests and reduce environmental and health hazards caused by the use of chemical control

**Efficient water harvesting** (especially in dryland areas) such as small-scale irrigation allows to reduce the need for irrigation while increasing its efficiency

**Manipulation of vegetation structure** and plant associations: improves efficiency of water use as well as promoting biodiversity

**Agro-forestry,** especially the use of multifunctional trees: maintains and improves soil fertility through nitrogen fixation, enhances soil structure and modifies the microclimate

**Use of local resources and renewable energy sources, composting and waste recycling:** allows a reduction in the use of external inputs as well as diminishing pressure on the natural resource base

**Holistic landscape management:** around field perimeters (windbreaks, shelterbelts, insect strips and living fences), across multiple fields (mosaics of crop types and land-use practices) and at the landscape-to-regional scale (river buffers, woodlots, pastures and natural or semi-natural areas)



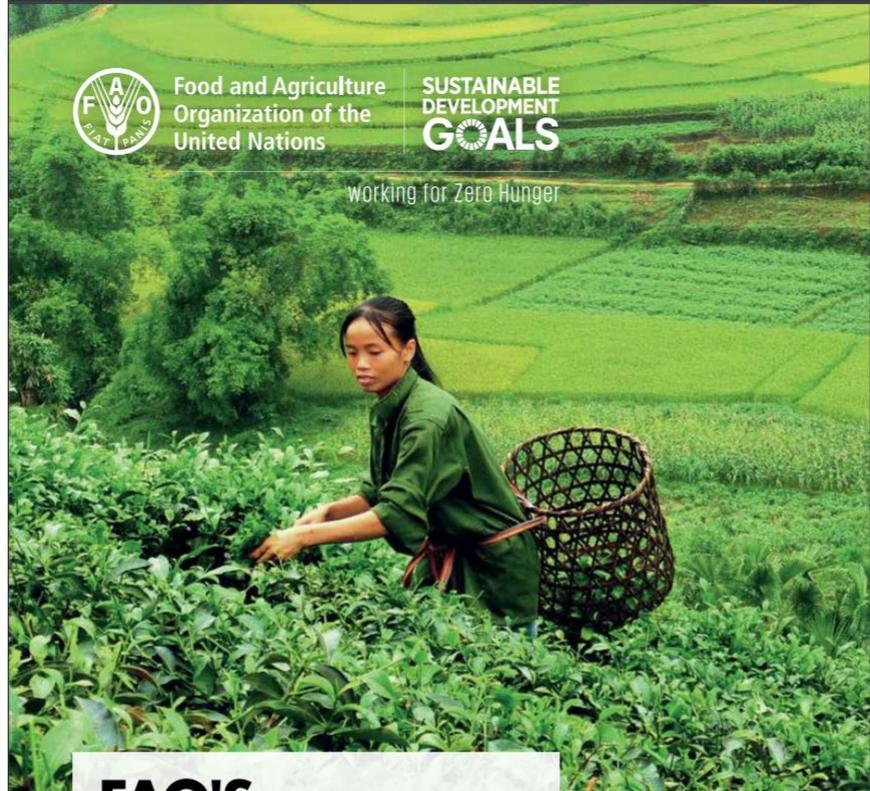
# FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS



Food and Agriculture  
Organization of the  
United Nations

SUSTAINABLE  
DEVELOPMENT  
GOALS

Working for Zero Hunger



## FAO'S WORK ON AGROECOLOGY

A pathway to  
achieving the SDGs

# ‘The Role of Agroecology in Sustainable Intensification’ Land Use Policy Group, 2015

Examining the role agroecology can play in raising yields and minimising environmental impacts whilst using less land. It compares agroecological and conventional systems in terms of energy and GHG emissions, biodiversity, soil and water, profitability and productivity and found that agroecology could maintain or improve the performance of agriculture in all these elements; providing a beneficial tool for combating climate change, improving the natural capital of the UK and producing food.

# Resources

<https://landworkersalliance.org.uk/wp-content/uploads/2020/03/Ten-steps-towards-net-zero-food-farming-and-land-use.pdf>

<https://landworkersalliance.org.uk/food-farming-climate-change/>

<https://www.gov.uk/government/news/agriculture-bill-to-boost-environment-and-food-production>

<https://newint.org/blog/2017/12/14/peasants-feed-world>

<http://www.fao.org/agroecology/overview/global-dialogue/en/>

<https://www.gov.uk/government/statistics/food-statistics-pocketbook>

<http://www.fao.org/3/I9021EN/i9021en.pdf>

<https://pubs.iied.org/pdfs/14629IIED.pdf>