FARMING connect
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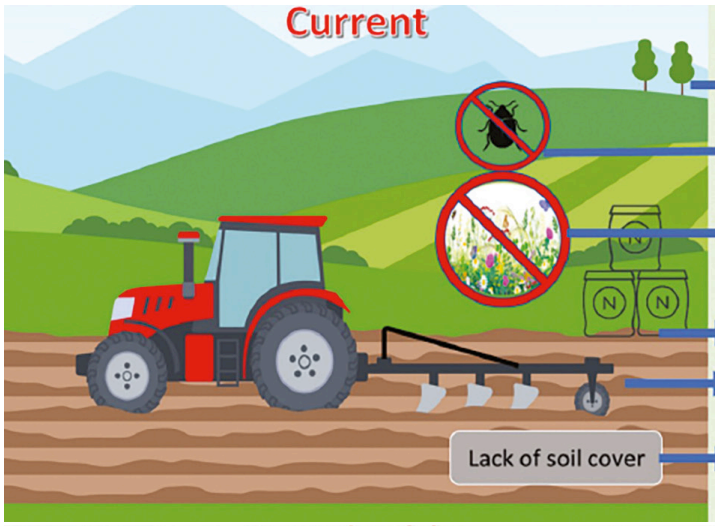
Sustainable and Regenerative Farming

In the agricultural sector, there is increased talk of **sustainability and regeneration** on farms

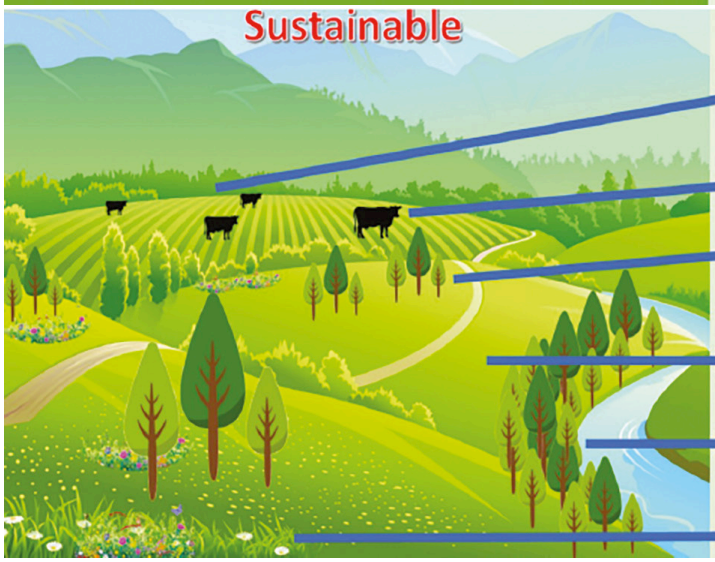
BUT WHAT DOES THIS MEAN?

Sustainability focuses on ensuring current farm practices **don't harm future generations**



Impact on Future

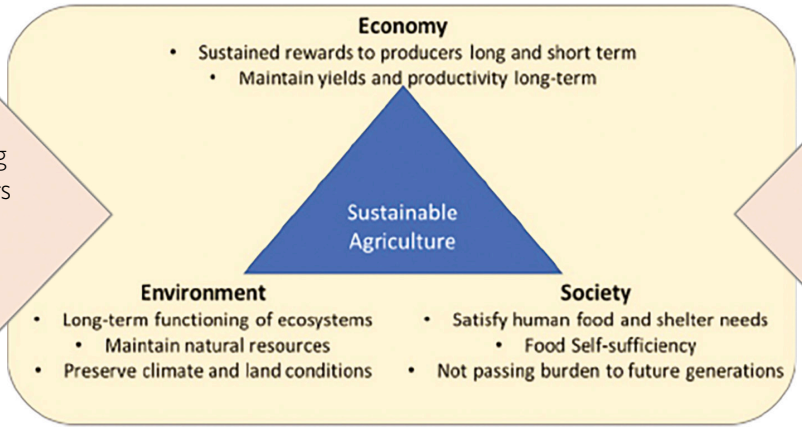
- Reduced tree planting, riparian buffer use and hedges could allow more environmental pollution to build up over time
- Pesticide and chemical controls can pollute soils and water sources reducing biodiversity and skewing ecosystems
- Lack of species richness and biodiversity-hotspots reduces pollinators and biodiversity present to benefit future farmers
- Heavy use of fertilisers degrades natural soil microbiomes and causes eutrophication and biodiversity impacts around farms
- High tillage reliance reduces soil microbiome impacts releases CO_2 and can be detrimental to biodiversity
- Leads to soil erosion and reduced soil health and can impact soil microbiome functionality and irrigation



Impact on Future

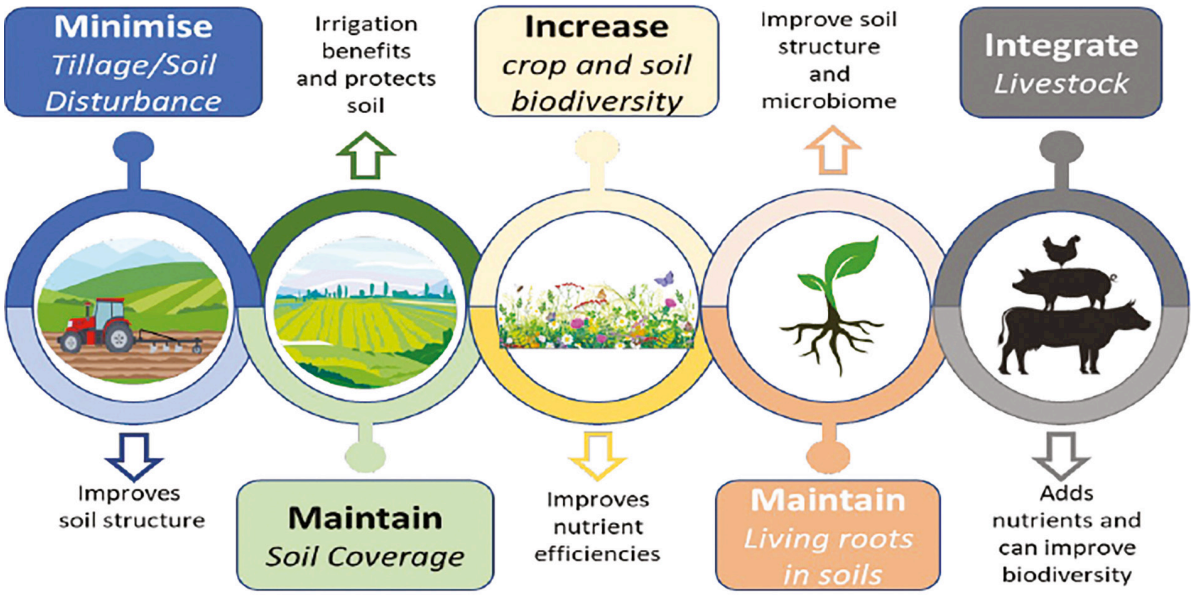
- Diverse crop rotations utilises soil nutrients more efficiently and can increase the resilience of farm production long-term
- Mixed farming allows livestock to provide nutrients to crops in a circular manner avoiding fertiliser use
- Increasing tree cover helps to sequester carbon balancing greenhouse gas emission profiles from farm practices
- Legume use and cover cropping increases soil nutrients naturally without need for fertilisers and benefits soil health
- Species diverse riparian buffers reduce pollution and provide habitats for biodiversity beneficial for biological control
- Mixed species and biodiversity hotspots encourage increased biodiversity beneficial for ecosystems and biological control

Sustainability of farming impacts not just farmers but also **country wide economies** and the **general public**



Benefitting the **environment** is vital to long-term farming as **unpredictable climate changes** can damage crop and livestock production

Regenerative farming theoretically differs in that it **focuses on improving situations** not just sustaining them. It aims to do this by **working alongside natural ecosystems**.



Regenerative farming is often **used interchangeably** with sustainable farming and **many of the practices linked with these strategies overlap** but their impacts are most important.

Practice	Suggested impact	Specific figures
Reduce or eliminate tillage	- Decreases compaction - Positive impact on soil fungi and invertebrates - Reduces greenhouse gas (GHG) emissions	- Compaction **reduced available nutrients by up to 50%** and **increased nitrous oxide emissions by 400-500%**
Riparian buffers	- Reduces leaching and eutrophication of water sources - Positively impacts biodiversity - Offers alternative production diversity - Sequesters carbon	- Reduces **phosphate entering water courses up to 85%** - Reduces **nitrogen up to 75%** entering water courses - Improves river habitats for fish and invertebrates
Agroforestry	- Improves environments for livestock - Protection from the weather for crops - Dual production outputs for diversification - Improves biodiversity - Sequesters carbon	- Up to **£15 per ha per year saved** due to reduced soil erosion and balance of nitrogen and phosphorous in soils - **10% increases** in **soil organic carbon** levels - Improves erosion control, biodiversity, and soil fertility
Selective forage use and species-rich pastures	- Improve livestock growth efficiencies and nitrogen use efficiency (NUE) - Reduces GHG emissions - Reduces fertiliser need - Sequesters carbon	- Increased water-soluble carbohydrates in forage **decreased methane emissions in lambs between 9 - 25%** - Reduces **nitrogen in cattle urine by up to 20%** reducing downstream pollution - **NUEs** (in high sugar grasses with white clover) were **up to 42% higher** than standard pastures

Environmental strategies like these seem vital for the future of farming. As such, less focus should be on defining terminology. Instead we should be **aiming to incorporate such practices** in targeted and efficient ways across all aspects of agriculture.

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