

Redesigning European cropping systems
based on species mixtures

Intercropping – redesigned cropping strategies for food production and environmental services

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Future agricultural
systems need to
embrace biodiversity
to deliver sustainability
and profitability for
people and the planet



Intercropping
2 or more species
grown together

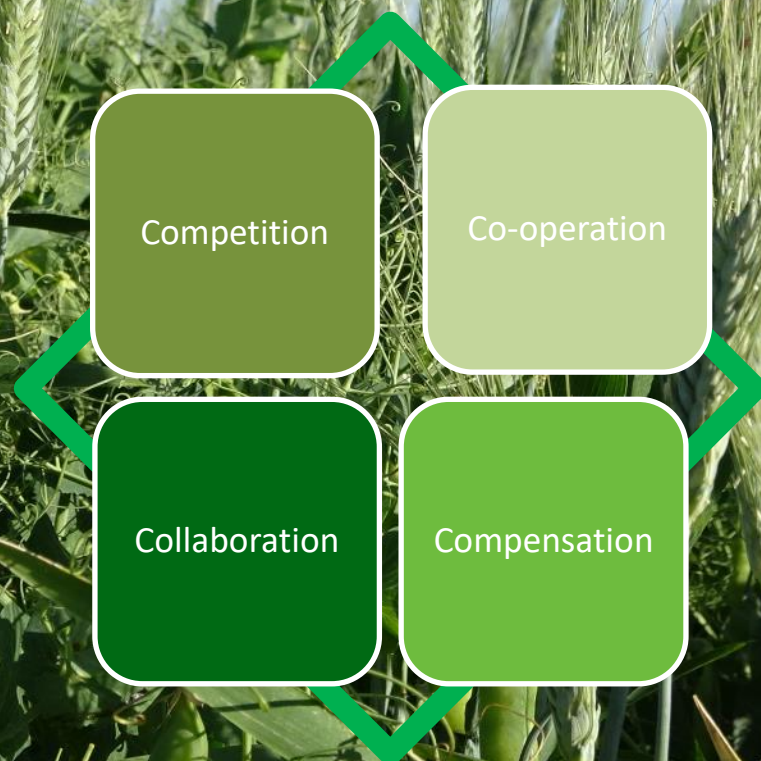


Food & Feed



Environmental
services

What can intercropping deliver in the field? The 4 Principles



COMPETITION



Why is this important?

- Determines the structure and dynamics of the total crop.
- Considers space and time.
- Outcompetes weeds by using up available light, water and nutrients.
- Reduces need for agrochemicals



COMPLEMENTARITY

Vertical space



Horizontal space



**Improves resource use - above and below ground.
The legume fixes it's own nitrogen through Biological Nitrogen Fixation.
This leaves the soil nitrogen available to the cereal.**

CO-OPERATION

Lentils grown alone



Lentils with wheat



- Reduces waste
- Ensures a harvestable crop
- Protein for direct human consumption



COMPENSATION

Chickpea alone –
poor germination



Chickpea with
Durum wheat



Why is this important?

- Sustains crop yields
- Protects soils
- Reduces opportunities for weeds
- Helps in overcoming extreme weather events or poor germination conditions

EXAMPLES OF CONTRIBUTION TO POLICY TARGETS

Home > Strategy > Priorities 2019-2024 > A European Green Deal

A European Green Deal

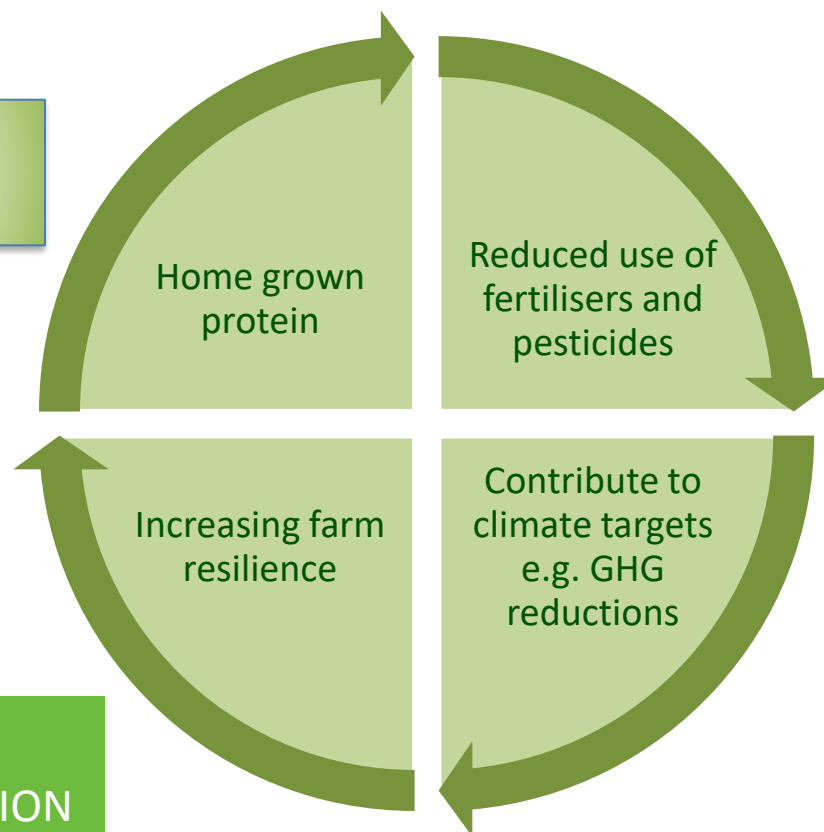
Striving to be the first climate-neutral continent

Cereal/legume
intercrops

Farm to Fork Strategy

For a fair, healthy and
environmentally-friendly
food system

FEUgreenDeal



CO-OPERATION

COLLABORATION

COMPETITION

COMPENSATION

Multi-Actor Platforms have been a critical part of our research



Types of MAPs

- Organic
- Conventional
- Organic & conventional

Pedo-climatic conditions

- Continental-central
- Atlantic
- Mediterranean

Netherlands
Sweden
Switzerland
UK
Denmark
France
Germany
Greece
Poland
Spain

Some quotes from our farmers:

I am happy with the mixtures, if one crop fails due to a severe pest or disease attack, I have the other crop to compensate



The early soil coverage (from the intercrop) was remarkable and the weed pressure was low



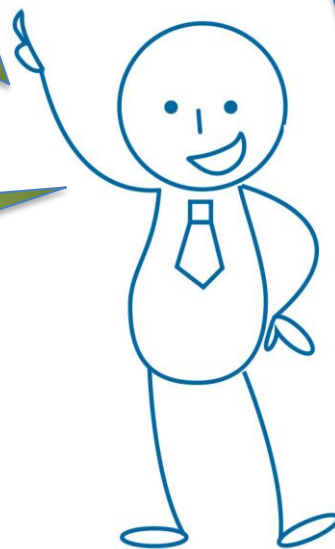
If species mixtures are adjusted to local conditions, we might be able to reduce pesticide use, working hours..also artificial fertilizers giving lower investment costs and thereby higher net profit



Crop mixtures can provide high quality feed early in spring when all the animal feeds have finished.



Mixtures with a legume component are an ideal greening element: it increases biodiversity, is beneficial in crop rotation and additionally increases the production of native protein.



RECOMMENDATIONS



Go beyond agronomy – adapt across the entire agri-food system all the way to consumers.



Design intercropping specific research, advice and tools (including models) to support decision making and local adaptation.



Build on trust, acknowledgement and efficient peer learning between researchers and practitioners.



Provide courses and training for intercropping in the field and beyond (e.g. processing) - practical and academic.



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PARTNERS IN ReMIX

