Options for Companion Cropping and Intercropping in the UK

By Andrew Howard
My Family Farm

- 350ha arable cropping
- No-till for 5 years
- Crops: wheat, beans, oats, linseed, barley and Peola
- 11ha Solar Farm
Definition of Intercropping

“The growing of two or more crop species where part or all of their crop cycle overlaps temporally and/or spatially, where one or more of the component species is taken to harvest”
Nothing New in Agriculture!

Three Sisters ~ 5000yrs ago
MONOCULTURES
Variety Mixtures
Strip Intercropping
Relay Cropping
Temporary Intercropping
Full Season Intercrop
Triple Harvest
Undersowing
Without Lucerne and 180kg/ha/N - 7.8t/ha

With Lucerne and 100kg/ha/N – 8.0t/ha
Welcome to the OSCAR Living Mulch and Cover Crop Toolbox; providing tools to help improve knowledge and drive the use of Conservation Agriculture practices and subsidiary cropping systems throughout Europe.

The aims of the Toolbox are to:
- Make scientific literature and technical information on cover crops and living mulches widely available
- Promote the current knowledge and impact of innovative subsidiary cropping systems and potential solutions to ecological problems

The Toolbox will help you:
- Identify suitable cover crop and living mulch species and varieties and appropriate species mixtures
- Locate and access information on appropriate machinery
Pasture Cropping
Machinery
Why Intercrop?
Fewer Weeds
Fewer Insect Pests
<table>
<thead>
<tr>
<th>Companion crop species</th>
<th>Seeding rate (lbs per acre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hairy vetch</td>
<td>10</td>
</tr>
<tr>
<td>Red clover</td>
<td>1</td>
</tr>
<tr>
<td>Chickling vetch</td>
<td>5</td>
</tr>
<tr>
<td>Austrian winter peas</td>
<td>5</td>
</tr>
<tr>
<td>Iron and clay cowpeas</td>
<td>5</td>
</tr>
<tr>
<td>Pearl millet</td>
<td>1</td>
</tr>
<tr>
<td>Wildlife grain sorghum</td>
<td>2</td>
</tr>
<tr>
<td>Cereal rye</td>
<td>15</td>
</tr>
<tr>
<td>Nitro radish</td>
<td>0.3</td>
</tr>
<tr>
<td>Rapeseed</td>
<td>0.3</td>
</tr>
<tr>
<td>African cabbage</td>
<td>0.3</td>
</tr>
<tr>
<td>Broadleaf mustard</td>
<td>0.3</td>
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<tr>
<td>Peredovic sunflower</td>
<td>0.5</td>
</tr>
<tr>
<td>Safflower</td>
<td>0.5</td>
</tr>
<tr>
<td>Flax</td>
<td>1</td>
</tr>
</tbody>
</table>
Less Disease
Fewer Inputs
Barriers to Uptake
Things to consider before starting Intercropping

- Is there a market for the produce?
- Soil fertility and soil nitrate levels
- Crop rotation
- Field weed pressure
- Choose which intercrop component you want to dominate and which to be the subsidiary
- Drilling depths and crop row widths
- Drilling timings
- Choice of cultivars
- Harvest dates
- Can your intercrops be separated after harvest?
Future direction of research

• Future plant breeding needs to take into account weed competition, adaptive capacity, Nutrient Use Efficiency. Current varieties may simply not be good enough for intercropping.

• There should be farmer owned, run and financed breeding programmes for plants cultivars and Intercrops (Facilitated by Levy board and government)

• Most research on Intercropping in the UK has been carried out in organic farming, more research needed in conventional farming.

• A lot of pesticide applications could technically be illegal with current label restrictions. There is a need to re-design the registration system to include intercrops

• Machinery developed with intercropping in mind

• Benefits of intercropping needs to be demonstrated throughout the supply chain.
Decision Matrix

Choose Crop Mixture

Soil Type
Location/Region
Farm System
End Market

Suggest Seed Rates/ Varieties
"Clean air and water, a diversity of animal and plant species, soil and mineral resources, and predictable weather are annuities that will pay dividends for as long as the human race survives - and may even extend our stay on Earth."

- Alex Steffen
ReMiX

Species mixtures for redesigning European cropping systems
Companion cropping and intercropping has the potential to produce up to 30% more crop yield while also allowing for a reduction of off-farm inputs.

To achieve success you need good planning: it is a management and knowledge-intensive approach to farming.

Every farm, soil type and climate will lend itself to different cropping combinations. There is no one blueprint that will suit everyone.

There are limited opportunities for patenting in intercropping so funding for research will be limited unless supplied by farmers, levy boards and governments.

The potential for Intercropping and Companion cropping in the UK is HUGE!!
Having a 3 crop rotation would be boring, 6 or 7 is less boring, 3 crops planted together in the same field is exciting! #polyculture
Thank you
My Journey

2001
- Min-till
- Horsch CO4

2007
- Strip Till
- Claydon

2011
- No-till
- JD750a

2011
- Cover crops
- Livestock Integration

2012
- Companion crop
- OSR with Vetch and Berseem

2013
- Intercrop
- Peas/Rape