WINTER WHEAT AND SUMMER SHADE

Sidonie Artru1, Ludivine Lassois2, Sarah Garré1, Christian Dupraz3

University of Liège & Gembloux Agro-Bio Tech, 1Agriculture & Life Platform, 2Forest Nature & Landscape Dept. Gembloux, Belgium, 3UMR System, Montpellier, France

sidonie.artru@ulg.ac.be

AGROFORESTRY IN BELGIUM SOIL AND CLIMAT CONTEXT

Hypothesis Light is the principal competed resource between tree/crop in agroforestry
Constraint Only young agroforestry plot (1-7 years old)
Objective Evaluate the effect of light reduction on winter wheat growth and productivity

LIGHT ENVIRONMENT UNDER TREES

 HOW TO SIMULATE AGROFORESTRY SHADE ?

1. Spatial variability
2. Temporal variability and shade intensification
3. Direct and diffuse light transmission

To mimic: winter wheat & hybrid walnut agroforestry

ARTIFICIAL SHADE TREATMENT

Installation of shade layers during wheat and walnut cross-phenological period

 HOW DOES WINTER-WHEAT GROW UNDER SHADE ?

<table>
<thead>
<tr>
<th>Measured variables</th>
<th>Period</th>
<th>Shade impact on comparison between treatments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomass</td>
<td>5 times before harvest</td>
<td>Crop yield</td>
</tr>
<tr>
<td>LAI (leaf area index)</td>
<td>Harvest time</td>
<td>Grain quality</td>
</tr>
<tr>
<td>Yield components</td>
<td>All growing season</td>
<td>Light use efficiency</td>
</tr>
<tr>
<td>PAR (photosynthetic active radiation)</td>
<td></td>
<td>Partitioning of the dry matter</td>
</tr>
</tbody>
</table>

* Varela et al., 2011. Do light and alfalfa responses to cloth and slatted shade represent those measured under an agroforestry system?