



**HAL**  
open science

## Intercropping lentil with spring wheat to improve productivity and income in organic farming

Loic Viguiier, Laurent Bedoussac, Etienne-Pascal Journet, Eric Justes

### ► To cite this version:

Loic Viguiier, Laurent Bedoussac, Etienne-Pascal Journet, Eric Justes. Intercropping lentil with spring wheat to improve productivity and income in organic farming. 2. International Legume Society Conference (ILS2), Oct 2016, Troia, Portugal. 358 p. hal-02739133

**HAL Id: hal-02739133**

**<https://hal.inrae.fr/hal-02739133>**

Submitted on 2 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

15:00-15:10 Oral – S16

## **Intercropping lentil with spring wheat to improve productivity and income in organic farming**

**Viguiet L.<sup>1,2</sup>, Bedoussac L.<sup>2,3</sup>, Journet E.P.<sup>2</sup>, Justes E.<sup>2</sup>**

1 - Cooperative Qualisol, F-82100 Castelsarrasin, France

2 - INRA, UMR1248 AGIR, F-31320 Castanet-Tolosan, France

3 - ENFA, F-31320 Castanet-Tolosan, France

4 - CNRS, UMR2594 LIPM, F-31320 Castanet-Tolosan, France

The food legume lentil is attracting growing interest among organic farmers. However, its productivity is low and very variable notably due to its lodging sensitivity. We analysed the functioning and performances of lentil-spring wheat intercrops (IC) for yield improvement/stabilization. An organic field experiment was conducted at INRA-Toulouse, with 4 lentil cvs. and 2 of spring wheat grown as sole crops (SC) and IC at 4 seeding ratios (67/33%, 100/17%, 100/33% and 100/50% for lentil and wheat resp., compared to SC density). Total IC grain yield was 1.24 t/ha and was higher than the mean yield of the respective SCs, higher than that of lentil SCs (0.87 t/ha) and similar to that of spring wheat SCs (1.29 t/ha). This confirms the interest of IC in organic farming to improve yield due to the species complementarity for use of available resources. Lentil production was often lower in IC than in SC as a result of wheat competition. Hence to favour yield of lentil, the most profitable crop (3-4 times higher price), wheat density must remain low. Even with wheat density as low as 17% lentil lodging was reduced which may increase the amount of lentil harvested in IC vs. in SC. Thus lentil IC could be an efficient system to increase organic farmers net income in comparison to classical lentil SC. "Genotype by density by species" interactions were observed across IC combinations, calling for further study of the different cultivars responses in order to design optimized IC systems.