Crop mixture: lentils and wheat

Picture 1: Lentils with wheat (INRA Toulouse)

Why combine lentils with wheat

Coming from the Middle East and Central Asia, lentil is a leguminous crop cultivated since prehistoric times for its nutritional and taste qualities. Consumers are particularly attract by this seeds, rich in protein, fiber and iron, which help to keep fit! As fallout from that, lentils also entice farmers thanks to their ability to fix nitrogen from the air and their attractive selling price. However, its sensitivity to weeds, lodging and lentils weevils (*B. signaticornis*) makes its economic performance uncertain.

In order to limit these agronomic drawbacks and, ultimately, to increase farmers' gross margins, INRA Toulouse (in collaboration with the agricultural cooperative Qualisol (82)) has begun testing the lentils-wheat mixture (picture 1) 3 years ago.

Interview with Loic Viguier (picture 2), PhD student at INRA Toulouse (UMR AGIR) since May 2015 on this topic.

Picture 2: Loic VIGUIER

What is the main interest of this mixture?

"One of the main interests of this mixture lies in the fact that it makes it possible to significantly reduce the lentils lodging: the wheat stem acts as a tutor. It enables a clear improvement in the harvesting efficiency. Indeed, thanks to this mixture we are able to harvest 75% of the lentils grains against only 50% with sole crops (picture 3 below). Thus, although lentils are clearly competing with wheat, and even when the density of the latter is kept to a strict minimum, the lentils yield is the same in sole crops and in mixture."

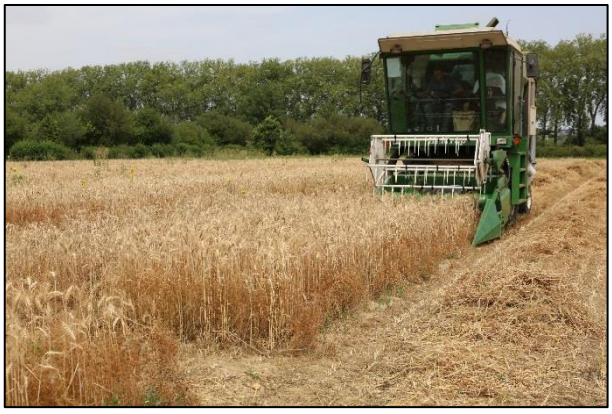
Is the fight against weeds and lentils weevils effective?

"Some certainties have been achieved thanks to our trials, such as the fact that mixtures are an effective way to reduce weed rates compared to pure lentils. But on the other hand, they do not have any effect on the lentils weevils that remain a major problem: they have generated 41% yield losses on average."

Are farmers seeing their gross margin increase?

"Yes, because despite the high seeds sorting costs, the mixture gross margin appears higher than that of pure crops (974 €/ha against 713 €/ha). This difference is explained by a wheat production with a higher protein content than that obtained in pure crops. Remember that our trials were conducted in organic farming and without fertilization."

To conclude, crop mixtures do not also mean environment respect and protection of the farmer's life quality?



Picture 3: Lentils-wheat harvest