

Growing yellow peas in Wallonia in a pea-wheat intercropping system

Problem

The Belgian climate is not suitable for growing yellow peas in monoculture. This is due to the combination of wind and rain that causes the peas to lodge.

Solution

One solution is to combine the yellow peas with wheat. This allows for a good exchange of services between these two crops, as the peas provide nitrogen to the cropping system while the wheat acts as a support for the pea.

Benefits

This intercrop offers advantages on several points:

- **Agronomic:** the reduction of nitrogen inputs thanks to the pea, a reduction of fungicide treatments linked to a reduction in the propagation of diseases, and a higher land equivalent ratio of the intercrop compared to separate wheat and pea crops
- **Economic:** income from two different markets : pea and wheat with a higher protein content. Over the last 10 years, the average economic returns from an Olympic average have given the following results: Wheat sole crop (670€/ha); Pea sole crop (480€/ha); Pea+Wheat intercrop without help from government (860€/ha); Pea+Wheat with help from government (1100€/ha)
- **Environment:** reduction of inputs, local protein production (therefore reducing CO2 costs of imports)

Practical recommendation

Depending on the crop combination chosen, the entire crop cycle must be rethought. First of all, the place in the rotation must be rethought according to the dominant crop. Here, the combination can be placed after a wheat, sugarbeet or potato crop. A Pea-Wheat intercrop before wheat is preferable to wheat followed by wheat. This is because pea + wheat limits the spread and prevalence of disease and the nitrogen released by the pea can be used by the n+1 crop (wheat in this example). However, this is only advisable if the farmer cannot do otherwise in his rotation.

1



2



3



Picture 1- trial fields to monitor varieties of peas+ wheat through our partners (2021) (Photo: Gillain Benoît, Walagri). Picture 2- harvest result (Photo:Roiseux Olivier, Walagri)., Picture 3-Flour sold by our partners from wheat pea fields (Aveve Marketing, Arvesta)

- Once the place in the rotation has been chosen, the fertilisation must be thought out according to the needs of each crop, e.g. for pea-wheat, an excess of nitrogen can lead to nodal deficiencies and reduction of nitrogen fixation. Here the amount of nitrogen applied compared to conventional wheat can be divided by 4.
- Crop protection measures must also be considered. In intercrops the treatments used in monocultures are often not appropriate. Even if the association between intercrops increases their resistance to diseases and weeds, in certain cases crop protection measures must also be used. For example, in the pea-wheat intercropping system the authorized herbicides were not effective and could not be applied after the emergence of the pea. To face this issue, different tests of mechanical weeding had to be experimented with.
- There are many different sowing densities that depend on the varieties and the type of soil on which the intercrop will be grown. Therefore, the experienced eye of the technician will be indispensable, with the objective being to obtain a ratio of 1/3 peas and 2/3 wheat at the harvest (Picture 2).
- Finally, the varieties selected are very important because the harvest must be done simultaneously. The varieties must also be complementary in terms of their competition for resources (such as soil elements, light, water etc). Testing these different aspects, on experimental fields, require a lot of time before launching the crop on the market (Picture 1).
- Our final goal here was not to valorise these high-quality products in cattle feed but as human food. In this way, we were able to develop high-quality flour (Picture 3) and pea isolates for our partners that are directly used in everyday food.

Further information

Video

- Check the following video for further instructions (French).(<https://youtu.be/1rQBikyjE3c>)

Further readings

- <https://www.livre-blanc-cereales.be/>

Weblinks

- <https://agrivirtual.eu/>

About this practice abstract and DiverIMPACTS

Publisher:
Walagri

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Permalink: <https://zenodo.org/record/6520347>

This practice abstract was elaborated in the DiverIMPACTS project, based on the EIP AGRI practice abstract format. It was tested in Wallonia by the company Walagri.

DiverIMPACTS: The project is running from June 2017 to May 2022. The overall goal of DiverIMPACTS - Diversification through Rotation, Intercropping, Multiple Cropping, Promoted with Actors and value-Chains towards Sustainability - is to achieve the full potential of diversification of cropping systems for improved productivity, delivery of ecosystem services and resource-efficient and sustainable value chains.

Project website: www.diverimpacts.net

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