

Introducing oats as an energy catch crop in maize monocropping in Bearn (France)

Problem

In Bearn, maize monocropping is the standard cropping system. Yet, this system must cope with the risk of price volatility as well as with the evolution of Common Agricultural Policy (CAP) regulations, which require the diversification of crop rotation. Besides agro-nomic aspects, profitability can also be improved with the valorisation of the intercrop period. In the current system, the soil is left bare.

Solution

To break maize monocropping, an innovative system based on the introduction of oats as an energy catch crop (ECC) for methanation was introduced (picture 1), in order to harvest two crops in a year instead of one. It has proved to enhance agronomic, economic and environmental performances.

Benefits

On a 3-years basis average, oats as an ECC produced 6.1 tonnes Dry Matter/hectare. Assuming the existence of an outlet, its sale compensates for the drop in production of the following maize and generates a gross product surplus of 540€/hectare. But operating costs increase. In the end, the introduction and sale of oats increases the net margin by 93 €/hectare (+26%, CAP aids included/-14% without CAP aids). The introduction of an ECC intensifies the production system whilst also providing environmental services (erosion control, soil structuring, nitrate trap, biodiversity, carbon storage etc.). By the end of the cycle, the energy produced/energy consumed ratio increases by 14% thanks to the introduction of a winter ECC.

Applicability box

Theme

Rotation diversification, multiple cropping

Agronomic conditions of Bearn (southwest of France)

Climate : Warm oceanic

Average T°C in winter : 5°C

Average T°C in summer : 20°C

Precipitation/year : 1100 mm

Soil of the region :

25% clay - 70% silt - 5% sand
Organic matter : 4%



Application time

In autumn

Required time

Oats sowing & harvesting
N supply & weeding if necessary

Period of impact

All year

Equipment

Common tools

Best in

Maize monocropping



Picture 1: Oat establishment (energy catch crop).

Source: ARVALIS

Practical recommendations

- Better to plough before sowing maize to prevent oat regrowth.
- Sow oats between 20th September and 10th October and adapt the earliness of the maize variety in order to harvest it early enough at a reasonable moisture content.
- Apply 70kg/hectare of nitrogen to oats at the end of the winter when vegetation restarts, preferably with organic fertilisers to keep a good organic matter content. It is important to apply before a significant rainfall to avoid nitrogen volatilisation.

Further information

Video

- **ARVALIS - Institut du végétal: Energy catch crops : how to introduce them in a crop succession (ENGLISH SUBTITLES)**
<https://www.youtube.com/watch?v=NB0958XL3to>

Weblinks

- **Syppre Béarn (FRENCH):** <https://syppre.fr/terres-humiferes-du-bearn/les-resultats/>

About this practice abstract and DiverIMPACTS

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ARVALIS-Institut du végétal
21 Chemin de Pau, 64121 Montardon, France

Institut technique de la betterave sucrière
45 Rue de Naples, 75008 Paris, France

Terres Inovia
1 Rue de Monceau, 75008 Paris, France

Authors:
Nicolas FLEUREAU (Arvalis), Pierre ROCHEPEAU (Arvalis), Clémence ALIAGA (Arvalis)

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Project website: www.diverimpacts.net

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