ClieNFarms
Climate Neutral Farms

ClieNFarms EIP-AGRI Practice Abstracts

Crop rotation - Corn and mix of cereals (including legumes)

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Crop rotation is a key agriculture best practice that can have multiple benefits on farm, such as, improved soil health, biodiversity, and when combined with other practices such as no-till or low-till can improve soil carbon sequestration and reduce the farm's carbon footprint.

A farmer in the Spain I3S was originally rotating two types of crops, starting with a summer crop and later with a winter crop, usually rotating corn seeds and barley. The farmer then fertilised the land using their cows' manure and adding a considerable quantity of inorganic fertilisers every year.

The farmer's approach was assessed by external experts in crop solutions, who proposed cultivating the crops using a new approach. The farm is now sowing 2 types of seeds mix, instead of just sowing barley. The farmer now has 105 ha with a mix called AVEX (Oat strigose or Black Oat, Annual Clovers, Vetches and Ray-grass) and 30 ha with a second mix of seeds called CMIX (Hybrid Barley, Annual Clovers, Vetches and Ray-grass) and is rotating both with corn.

The weather conditions in Catalonia (North-East of Spain) are becoming increasingly challenging, and are characterised by intensive heat waves in the summer, very cold winters and droughts, which were the regular conditions for the last two to three years. Additionally, the crops on this farm are grown without irrigation, and are dependent on erratic rainfall. Therefore, it was important to select a resistant combination of seeds and to improve soil health.

Adopting this approach, using these 2 mixes of seeds with legumes, had multiple benefits:

- Reduced the need for using inorganic fertilisation;
- The forage obtained is more digestible;
- The later corn planting is done in better soil conditions, due to the presence of additional Nitrogen fixed by the previous crop.

We also expect to see a progressive increase in the soil organic matter content and we will assess this at the end of the project.

Figure 1 : Mix of cereals including leguminous (AVEX)

Figure 2 : Soil sampling with AGACAL

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