

Waste management strategies for the mitigation of climate change on small scale farming

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Figure 1: SDG 12 and 13

Introduction

United Nations states that climate change is the defining issue of our time and now is the defining moment to act upon it. Globally, agriculture is the second of the most important producer of Greenhouse Gases (GHGs) after the transportation sector. Therefore, there is plenty of room for improvement. Sustainable farm-waste management can be a key strategy to achieve the Sustainable Development Goals (SDG) 12th and 13th. With this work we have assessed the most important on-farm organic-waste management strategies for Baixo Mondego in the Centro region, Portugal.

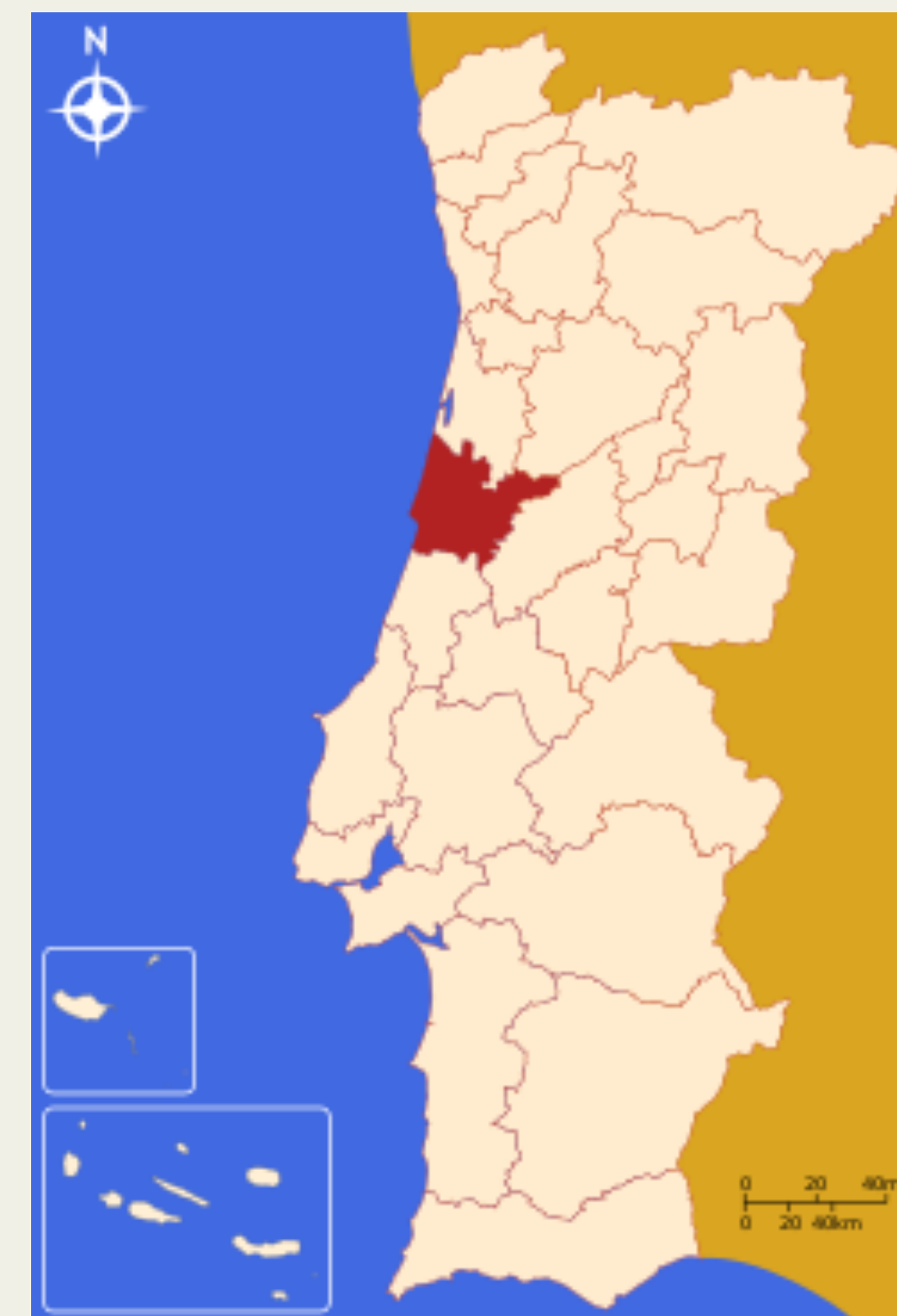


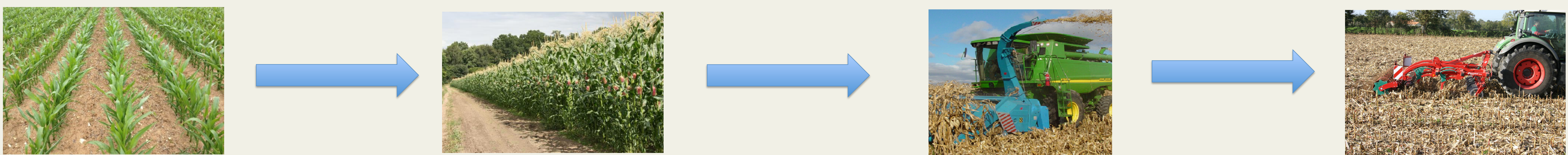
Figure 2: Portugal Map, highlighted: Baixo Mondego in the Centro Region

Methodology

Baixo Mondego in the Centro Region, Portugal is one of the most fertile areas of the Portuguese territory. The main cash crops are **maize** (34,5% of the utilized agricultural area) and **rice** (26,0% of the utilized agricultural area). Concerning the livestock sector, **dairy farms** are of extreme importance. We have assessed the most representative organic-farm-waste in the region by the means of a survey and presented the management strategies implemented by the farmers.

Results & Discussion

Maize farming



- Maize farmers harvest just the grains leaving the whole plant in the field throughout the winter. The soil remains covered during the winter, when the strongest rains are felt. During this time the organic matter is partially decomposed and this material is incorporated in the soil about two months before the planting for the coming season. These kind of practices allow the reduction of soil erosion and increase the soil organic matter content.

Rice farming



- Rice farmers keep the rice paddy flooded just for the necessary (and the least possible) time. This practice allows for the reduction of the CH₄ emissions. Majority of farmers just harvest the grain and leaves the whole plant residues on the soil until the coming season. Before planting the soil is tilled and the residues are incorporated, allowing for increasing the organic matter content and water retention capacity of the soil.

Dairy farming



Conclusions

- Vast majority of organic-farm-waste is returned to the soil for both maize and rice farming
- Only a small fraction of the rice farmers still burns the residues
- The main reason is economical, although it is circular economy at its best
- Dairy farmers own large extensions of land so they can grow forage and apply all the manure

Acknowledgements

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