BAIXO MONDEGO CASE STUDY

FAIRWAY

HOW A NUTRIENT MANAGEMENT TOOL CAN HELP TO IMPROVE WATER QUALITY IN BAIXO MONDEGO SUBREGION

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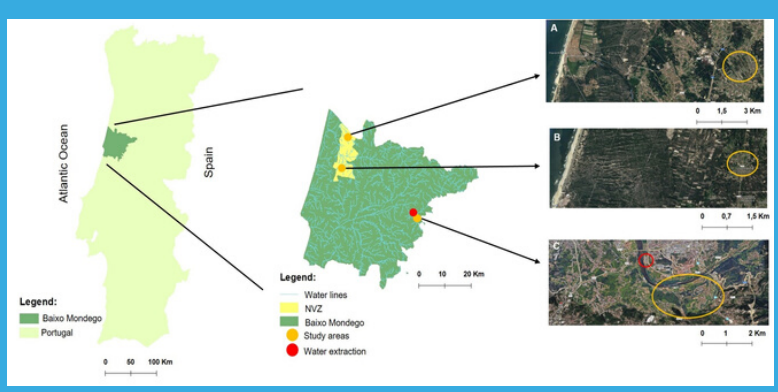
BAIXO MONDEGO SUBREGION

- Area: 2062km^2
- Inhabitants: 332 306
- 2 catchments: Baixo Vouga (~15% of the area) and Baixo Mondego (~85% of the area)
- Land-use: forest (~60%); agriculture (~30%); artificial land (~10%)
- Main crops: maize (~35%); complex cultural systems (~25%); rice field (~15%); vineyard (~10%)



BAIXO MONDEGO CATCHMENT

- Water abstraction: 2 wells for water treatment and supply for public consumption.
- Drinking water quality: nitrates and nitrites below the parametric values defined by legislation (50mg/L and 0.5mg/L, respectively).
- Groundwater quality: nitrite values above the parametric values defined by legislation (0.5mg/L) in some points (2003-2016).

MAIN QUESTION

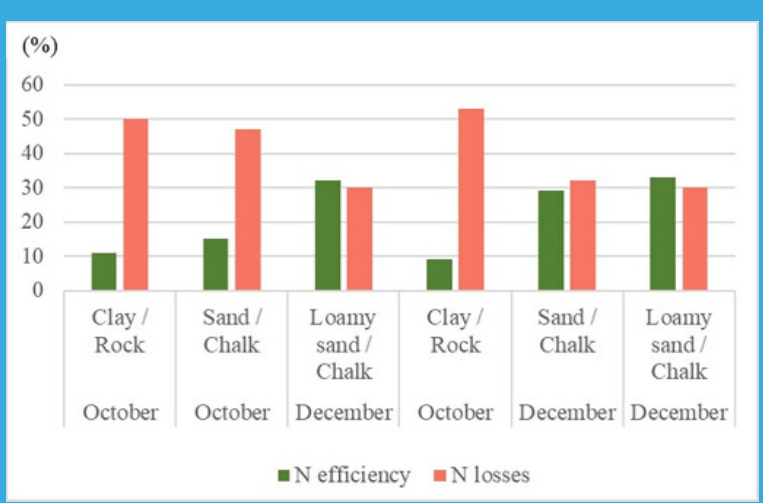
How to reduce N losses and increase N efficiency in the crop?

Cases analyzed	Type of manure	N efficiency	N losses
6	Layer manure	9%-33%	30%-53%
4	Broiler/turkey litter	12%-30%	21%-38%
1	Biosolids composted	14%	3%
2	Cattle FYM – fresh	10%	14%
1	Pig FYM – old	8%	9%
1	Horse FYM	7%	6%
1	Duck FYM (old)	7%	12%
1	Green / food compost	5%	0%-3%
3	Green compost	3%-5%	0%-3%

- The N losses varies between 0%-53%.
- The highest N losses are by ammonia emission (40%-100%), followed by nitrate leaching (15%-60%) and denitrification (0%-10%).
- Layer manure and broiler/turkey litter have the greatest percentage of N efficiency and losses.
- Thie variability of N efficiency and losses is associated with different soil textures and application dates.
- Sandy soils are associated with higher N efficiency and lower N losses, while the opposite happens with rocky soils.
- The farmers who applied manure in December had higher N efficiencies and fewer N losses than those who applied it in October.

RESULTS

- Tools like MANNER-NPK helps farmers to improve the management of nutrients, through organic fertilizer applications. The results can be used in crop nutriente management plans.
- In 11 farmers interviewed, only 35% make a fertilization plan.
- More than half of the analysed farms (55%) do not obey the allowable N limit application (170 kg/ha/year - DR n º 201/1998). In case of NVZ, 44% of the analysed farms do not obey this limit.
- The N efficiency of the crops is low, varying between 3%-33%.



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