

Water Quality Report for Irrigation

EFMA Primary Network

| Lab results | | | Water Quality for Irrigation (annex XVI, DL n.º 236/98) |
|--|------------------------------------|---------|--|
| Responsible Laboratory: Cesab (Bulletin n.º 254/22) | | | |
| Parameters | Units | Results | Conformity |
| Alkalinity | mg/L CaCO ₃ | 143 | |
| Ammonium | mg/L NH ₄ | >LD;<LQ | 0,037 |
| Nitrogen Kjeldahl | mg/L N | 0,56 | |
| Total Nitrogen | mg/L N | 0,79 | |
| Bicarbonates | mg/L CO ₃ H- | 174 | (a) |
| Boron | mg/L B | 0,0265 | ● |
| Calcium | mg/L Ca | 41,2 | |
| Chloride | mg/L Cl | 66,2 | ● |
| Total Hardness | mg/L CaCO ₃ | 181 | |
| Total Iron (b) | mg/L Fe | 0,068 | ● |
| Phosphates | mg/L P ₂ O ₅ | <LQ | 0,007 |
| Total Phosphorus | mg/L P | 0,011 | |
| Magnesium | mg/L Mg | 19,3 | |
| Manganese | mg/L Mn | 0,0112 | ● |
| Nitrates | mg/L NO ₃ | 1 | ● |
| Nitrites | mg/L NO ₂ | 0,017 | |
| Potassium | mg/L K | 5,13 | |
| Ratio of Sodium Absorption (SAR) | | 1,23 | ● |
| Ratio of Sodium Absorption adjusted (SARaj) | | 1,31 | |
| Sodium | mg/L Na | 38,1 | |
| Total Dissolved Solids (TDS) | mg/L | 357 | ● |
| Total Suspended Solids (TSS) | mg/L | <LQ | 3 |
| Sulphates | mg/L CO ₄ | 49 | ● |
| Total Coliforms | NPM/100 mL | 326 | |
| Fecal Coliforms | NPM/100 mL | 205 | ● |

Note: With the exception of the SARaj parameter, test to determine the remaining parameters are included in the range of laboratory accreditation.

| Field Results (Determined with a multiparameter probe) | | | Water Quality for Irrigation (annex XVI, DL n.º 236/98) |
|---|-----------------|---------|--|
| Parameters | Units | Results | |
| Temperature | °C | 11,3 | |
| pH | Escala Sorensen | 8,4 | ● |
| Conductivity | µS/cm | 542 | ● |

- Lower than the VMR (Maximum Value Recommended).
- Higher than VMR and below the VMA (Maximum Permitted Value).
- Higher than VMR. For this parameter is not defined one VMA.
- Higher than the VMA.

(a) The maximum value recommended in the Integrated Production Standards, for most crops, is 90 mg / L.

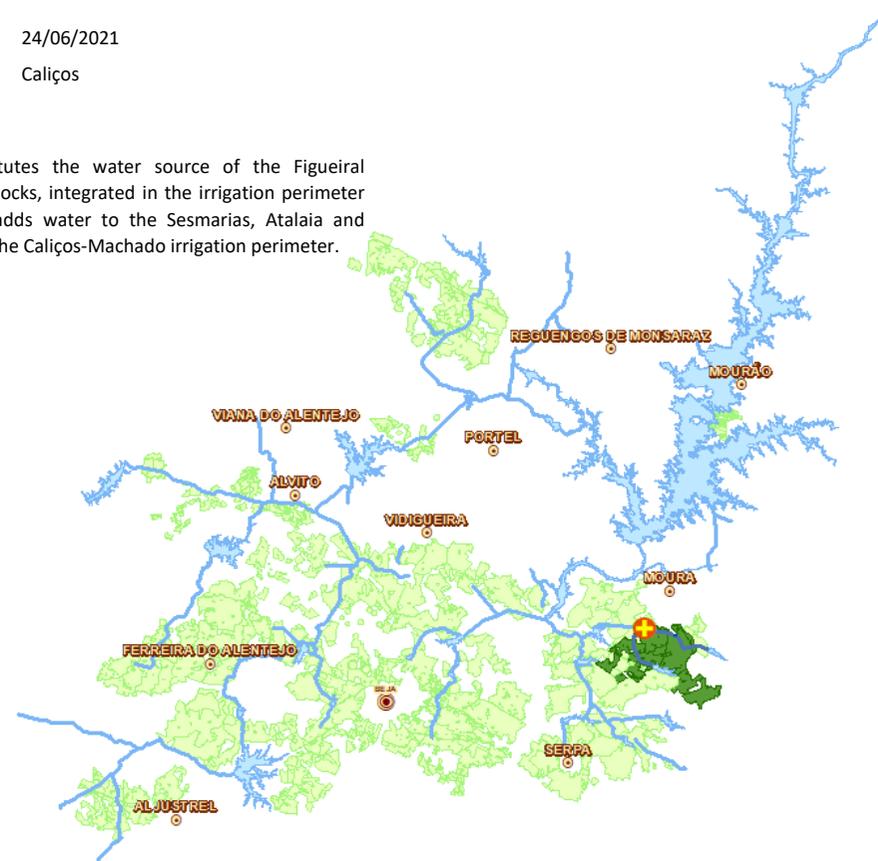
(b) The VMA in Annex XVI of the Decree-Law nº 236/98 refers to the dissolved iron (5 mg/L Fe).

Sampling Data: 24/06/2021

Sampling Place: Caliços

Benefited areas:

The Caliços reservoir constitutes the water source of the Figueiral Gravítico and Pias Gravítico blocks, integrated in the irrigation perimeter of Pias. This reservoir also adds water to the Sesmarias, Atalaia and Panasco blocks, integrated in the Caliços-Machado irrigation perimeter.



Comments:

The pH result exceeds the Recommended Maximum Value range for water quality for irrigation (VMR: [6.5-8.4]). This may be due to an increase in the biological activity of algae. High pH values can affect the plant's ability to absorb nutrients and promote the precipitation of iron, calcium, magnesium and phosphate ions, which may promote the clogging of drip irrigation systems.

The result of fecal coliforms exceeds the Maximum Recommended Value for irrigation water (VMR: 100 NMP/100mL). A maximum allowed value (VMA) is not defined for this parameter. The results of faecal coliforms in Caliços tend to be below the legal limit for irrigation water, with the result in the November 2021 campaign being 35 NMP/100 mL. The main problem associated with the presence of fecal coliforms in the irrigation water is related to the irrigation of crops for direct consumption.

The bicarbonate values exceed the maximum value recommended in the Integrated Production Standards. High concentrations of bicarbonates can affect crop yields, making it difficult to absorb some mineral nutrients.

The results of the remaining elements are within the range of expected values for this typology of water bodies.

In the document "*Water Quality - Complementary Information*", EDIA recommends some general measures to reduce the concentration of salts in the water bodies.