

Introduction and objectives

The Canary Islands are subject to a continuous drought with an average rainfall of about 300 mm per year. Therefore water resources are scarce, and any technologies activities to water reuse are interesting. The islands have become a live laboratory where all new technologies are tested. In present work, the aquaria wastewater reuse for irrigation of ornamental and medicinal plants has been investigated in Gran Canary Island. Also the effects on plants grow and aquaria evolution has been observed.

The main objective of this work is to demonstrate technical and economical feasibility to use the aquaria wastewater for irrigation use.

Materials and methods

For this purpose two aquaria of 800 L were installed in two different local companies producing and selling ornamental plants. During nine months, each aquaria wastewater was used to irrigate a number of replicates of one of these two species, *Spathiphyllum cochlearispathum* and *Rosmarinus officinalis*. Also, the same number of plants was irrigated using municipal water plus the regular nutritive chemicals used by plants' producers. Water quality parameters, irrigation frequency and quantity have been controlled, as well as plants growth and aquaria evolution.

| Date | 22/03/2011 | 11/04/2011 | 25/04/2011 | 21/06/2011 | 01/02/2012 |
|--------------------------------------|------------|------------|------------|------------|------------|
| Conductivity (µS/cm ²) | 614 | 315 | 377 | 468 | 466 |
| pH | 8,3 | 8,2 | 8,3 | 8,6 | 7,5 |
| Nitrit (mg/l) | - | 1,19 | 0,05 | 0,07 | <0,05 |
| TDS (mg/l) | 460 | 180 | 260 | 280 | 200 |
| Alcalinity (mg/l CO ₂ Ca) | - | <5 | <5 | <5 | <5 |
| Carbonate (mg/l) | <5 | <5 | <5 | <5 | <5 |

Table 1. Pérez Ortega's plant producer aquarium parameters.

| Date | 22/03/2011 | 11/04/2011 | 25/04/2011 | 21/06/2011 | 01/02/2012 |
|--------------------------------------|------------|------------|------------|------------|------------|
| Conductivity (µS/cm ²) | 1240 | 1336 | 1563 | 1365 | 3170 |
| pH | 8,6 | 8,4 | 8,4 | 8,2 | 8,7 |
| Nitrit (mg/l) | - | <0,05 | 0,05 | 0,11 | <0,05 |
| TDS (mg/l) | 740 | 660 | 680 | 660 | 1840 |
| Alcalinity (mg/l CO ₂ Ca) | - | <5 | <5 | <5 | 46 |
| Carbonate (mg/l) | <5 | <5 | <5 | <5 | 55,2 |

Table 2. Viveros Báez's plant producer aquarium parameters.



Species list
Pérez Ortega
Astronotus ocellatus
Plecostomus sp.
Pseudotropheus sp.
Cichlasoma festae
Cichlasoma citrinellum
Cichlasoma carpinis
Viejita
Cherax sp.

Initial nº 61
Initial biomass (g) 1155
Final nº 31
Final biomass (g) 1217
Mortality(%) 49,18



Species list
Báez
Plecostomus sp.
Cichlasoma nicaraguense
Cichlasoma sajica
Pseudotropheus sp
Ciclido joya
Cichlasoma citrinellum
Cichlasoma carpinis

Initial nº 93
Initial biomass (g) 1071
Final nº 58
Final biomass (g) 957
Mortality(%) 37,63



Results and discussion

Results showed an adequate growth in plants irrigated using only aquaria wastewater, showing only differences in *Spathiphyllum cochlearispathum*, having a better growth the irrigated with aquaria wastewater ones. *We should emphasize that plants produced by this method are ecological because no chemical products have been used. Moreover the reuse of the scarce water resources in the area must be noted. On the other hand, the aquaria displays in these companies have positively acts on the public visiting these centers.*