WASTEWATER REUSE : ALTERNATIVE RESOURCE FOR AGRICULTURE IN PROVENCE?

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Main idea: wastewater reuse (WWR) may prove locally to be a relevant answer to water scarcity, in remote areas far from conventional irrigation networks.

Two actions in a single project:
- Assessing opportunities of agricultural WWR within the regional territory
- Testing ‘on field’ efficiency of a rustic low technological scheme

Field test location: Verdon regional park
Moissac-Bellevue (83)
50 ha irrigable farmland, 4 farmers
Cereals, forage, vegetable crops

Low water availability
No river, no connection to regional hydraulic networks, no available relevant aquifer

4 000 people-equivalent wastewater treatment plant
500 cum/day discharge
1.5 km route through dry seasonal stream
## Description of the case study

### Project’s name
- **REUSE Verdon**

### Country
- **FRANCE**

### City
- **Moissac-Bellevue**

### Start Date-End Date
- **2012-…**

### Water Sources
- **Urban WWTP**

### Uses
- **Agriculture**

### Sources

<table>
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<tr>
<th>Origin</th>
<th>domestic wastewater</th>
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| Water reused (m³/Y) | 165 000 m³ |

### Uses

<table>
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<tr>
<th>Crops</th>
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<td>grassland, barley, wheat, vegetable crops</td>
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| Irrigated Area (Ha) | 50 ha |

### Cost of the Cubic meter (€/m³)
- **_______**

### Water Reuse Chain

#### Treatment
- **Classical activated sludge, circulation in a dry stream, storage / maturation**

#### Disinfection
- **Solar UV, natural oxygenation**

#### Storage Capacity (m³)
- **Test : 500 m³ / Project: 10 000 m³**

#### Irrigation
- **Sprinkler, Surface Irrigation**
Field test of a non technological low energy scheme

METHODS

➤ Monitoring :
- Sanitary parameters from WWTP to farmland uses (2012 – 2015)
- Continuous flow rate in the dry seasonal stream

➤ Setting up a temporary storage / lagooning basin, in order to :
- Test irrigation technique
- Assess disinfection effect
What practices and technologies to create effective, safe and economically viable water reuse chains?

RESULTS

- Regarding suspended solids, COD, E Coli and coliforms, ‘B’ water quality of the French regulation is maintained when water reaches the farmland
  - Thus a wide panel of agricultural uses is possible

- 8 days of storage / lagooning increases water quality and allows reaching ‘A’ water quality
  - The panel of uses gets wider, and vegetable cropping is even an option
What practices and technologies to create effective, safe and economically viable water reuse chains?

CONCLUSION

- The case study applies World Health Organization multiple barrier approach, as a succession of:
  - Classical activated sludge WWTP
  - Course of effluent in a dry seasonal stream
  - Storage / lagooning basin
  - Irrigation technique

- A relevant and rustic hydraulic scheme can be set up, avoiding intensive additional treatment

- Further testing is required, especially regarding viral and parasitic parameters

- 40 sites in Provence hinterland may be suitable for this type of schemes