



Company: Disa S.A., Chile

Description: LG Sonic unit for irrigation basin in Chile.

Project objective: Reduce algae mats and improve water quality in irrigation reservoir.

Irrigation reservoir

Before treatment

Agro business companies need to maintain water supplies of sufficient quantity and quality to have profitable yields. This water is usually affected by cattle grazing and highly nutrient run off that cause eutrophication. Algal populations can become large enough to clog irrigation systems and control often becomes necessary. Typical algae control methods (chemical and physical) are labor intensive and may even involve safety issues. One of the main water reservoirs of the company Disa S.A in Chile, peach and grape grower, was suffering from severe algae growth in their reservoir. The surface was covered with dark green filamentous algae mats that covered the entire surface, and caused problems in the pumps and nozzles used to irrigate crops and nurseries.



Figure 1: Day 1 of treatment. The algae mats are dispersed, light green colour and cover the entire reservoir.

After treatment

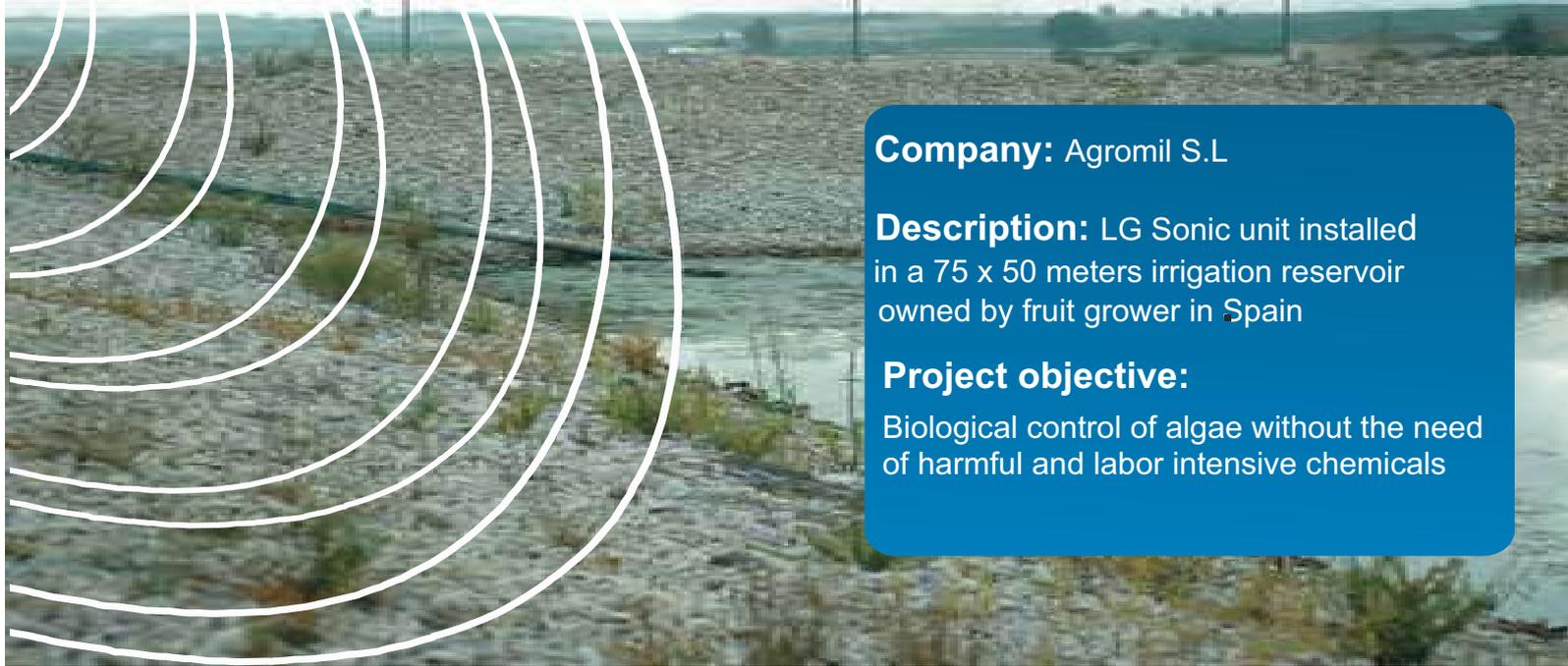
The company took pictures during the treatment to monitor the effects of LG Sonic technology on the algae mats. After 45 days, half of the water surface was clear and the rest was covered with a brownish layer of algae. The majority of the algae covering the surface turned progressively from dark green to bright green to finally brown-yellowish. This change in colour indicates that algae are irreversibly dying. To accelerate the improvements, it was recommended to harvest mechanically the dead algae.



Figure 2: Day 45 of treatment. Algae mats are concentrated and turn brownish, which means that they are dying.

Results

- 90% reduction of viable algae
- Substantial improvement in water quality
- Indirect increase of the lifespan of irrigation system.



Company: Agromil S.L

Description: LG Sonic unit installed in a 75 x 50 meters irrigation reservoir owned by fruit grower in Spain

Project objective:

Biological control of algae without the need of harmful and labor intensive chemicals

Irrigation reservoir

Before treatment

Covering up the water reservoir does not always solve the problem. Covering the reservoir to avoid sunlight may increase water temperatures underneath which can lead to uncontrolled growth of bacteria and other micro-organisms. Chemical treatment may damage the crops and farmland and have safety issues. Aeration, where oxygen is added to the water, alone does not suffice either. Pumps and nozzles were continuously clogged in a water reservoir owned by an important fruit producer in Murcia province, in Southeastern Spain.

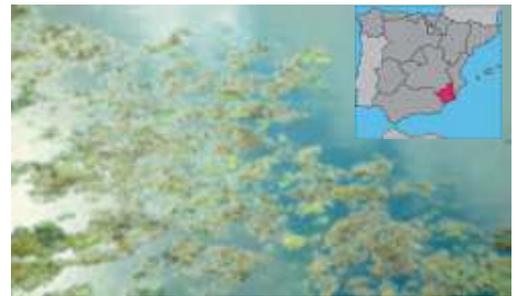


Figure 1: View of the algae mats before LG Sonic treatment and geographical location of the reservoir.

After treatment

The concentrations of chlorophyll a and total were monitored. These two parameters help to estimate the concentration of phytoplankton (microscopic algae) before and after LG Sonic treatment. When treated with the LG Sonic equipment, the water quality showed great improvement as shown on the table below. Other important physico-chemical parameters have not been monitored but it is recommended to keep an eye on suspended and dissolved solids, magnesium, Iron (2) and H₂S that can influence the formation of obstructions in tubes and pipe systems.



Figure 2: Views of the water quality one month after the installation of the LG Sonic unit. Absence of algae

Results

	Start	End
Chlorophyll A	36,15 g/l	0,52 g/l
Total chlorophyll	160,0 g/l	6,10 g/l



Company: Ampelax, UPA (Agriculture cooperative)

Description: LG Sonic unit for a 50x50 m reservoir storing drinking water for animals in Murcia (Spain).

Project objective: Reduce algae mats and decrease bacterial counts in the water.

Drinking water reservoir for animals

Before treatment

Agro business companies need to maintain water supplies of good quality to avoid water borne diseases that could affect their cattle. Moreover algal concentration can become a severe issue if toxins are released into the water and livestock drink from it. One of the main water reservoirs of the cooperative Ampelax, in Murcia presented dispersed floating algae that partially covered the water surface. The cooperative was seeking a solution to improve the water quality in the reservoir



Figure 1: Day 1 of treatment. The algae mats are dispersed all over the reservoir and the water is turbid.

After treatment

After finalizing the test, it was observed a strong reduction in algae and aerobic bacteria concentration. This lower amount in micro-organism concentration lowers the organic pollution, biochemical oxygen demand (BOD). This subsequently helps improving the quality of the drinking water. This allows longer water storage time and reduction of the decomposition rate.



Figure 2: Day 49 of treatment. Algae disappeared and turbidity was improved.

Results

- Better irrigation network conservation.
- Increment of agricultural productivity.
- Low maintenance of the devices.
- Saving of time and personel for algae control.
- Reduction of oxygen demand (BOD)
- Reduction of chemical oxygen demand (COD)
- Significant reduction of total suspended solids (TSS).

	Start	End
Aerobic bacteria count	30 cfu/100ml	2 cfu/100ml
Chlorophyll a	0.9 ug/l	0,02 ug/l
Total chlorophyll	1,92 ug/l	0,25 ug/l