

INDUSTRIAL WASTE TREATMENT



CASE HISTORY

Reducing COD and Ammonium in Agricultural Wastewater

DATE

March 2017

LOCATION

Spain

CUSTOMER

European Distributor

PRODUCT

BCP50™
A55L™

PROBLEM

A wastewater lagoon at a pig farm had high ammonium concentration. The customer desired to do a laboratory investigation on reducing COD and ammonium using BCP50™ and A55L™. Samples taken from the lagoon effluent had these characteristics:

	<i>Effluent Parameters</i>
pH	9.08
Conductivity (mS/cm)	3.97
TSS (mg/L)	528
COD total (mgO ₂ /L)	1,000
Ammonium (mg/L)	320
Phosphates (mg/L)	22
Nitrates (mg/L)	0

The two main goals for observation were as follows:

- Reduce COD and achieve a parallel reduction in ammonium levels due to natural nitrification.
- Activate natural nitrification independently of COD reduction.

APPLICATION

The shake flask test was used to periodically measure COD (soluble, filtered using 1.2 μ filter), ammonium, and pH on effluent samples during a six-day period. One bottle contained effluent and 1% of BCP50™ (the BCP50™ was preactivated in water for three hours before this test). Another bottle contained effluent and 1% of A55L™. After seeding, the bottles were kept in aeration/agitation.

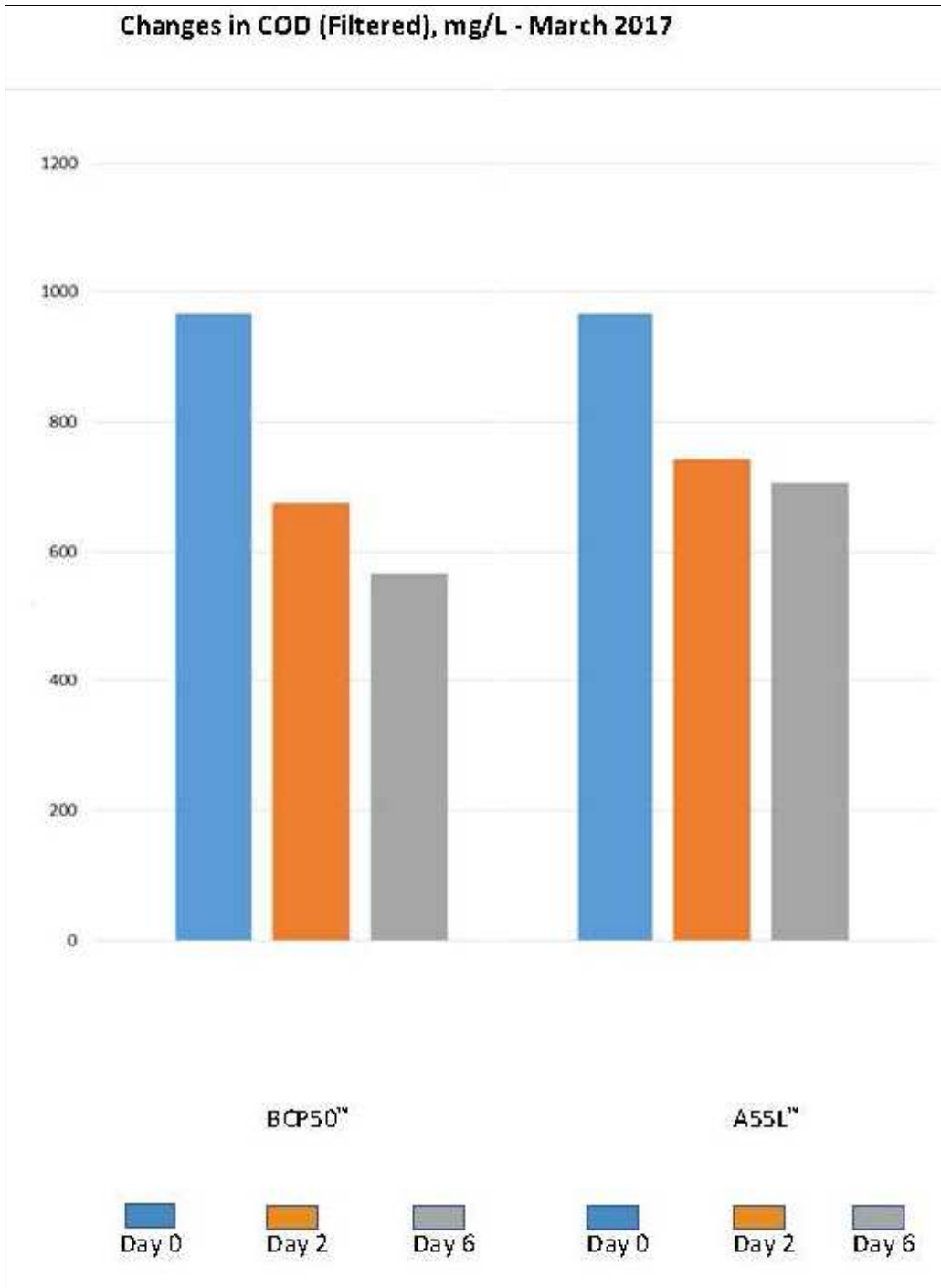
CONCLUSION

COD Levels: The lab observed a good reduction in COD in the sample containing BCP50™, and the reduction curve suggested that further biodegradation would proceed. The study showed that adding BCP50™ to the wastewater led to a 41% reduction in soluble COD in only six days. The sample containing A55L™ showed a COD reduction similar to the control sample, but this was not surprising as A55L™ is formulated for ammonium reduction.

Ammonium Levels: As expected, the effluent sample seeded with A55L™ achieved the best results in regard to eliminating ammonium, reaching a final concentration of 20 mg/L, a 93.8% reduction. At the same time, the concentration of nitrates in this reactor was very high (>500 mg/L measured with a semi-quantitative strip). The sample containing BCP50™ had a temporary increase in ammonium concentration that later dropped until it reached 260 mg/L, an overall reduction of 18.8%. In this case the detected concentration of nitrates was only 10 mg/L.

The COD reduction results clearly showed that application of BCP50™ can help plant management in case of organic-matter overload or point shocks. A55L™ showed great performance in terms of ammonium removal and can be used in cases of nitrification loss.

Changes in COD (Filtered), mg/L - March 2017



Changes in Ammonium Concentration, mg/L - March 2017

