

FIELD TEST: Use of **OX-AQUACULTURE®** in sturgeon culture

→ BACKGROUND:

The present field test was carried out in a professional facility for culture of sturgeon and caviar production located in Europe.

The hygienization of pointing water (10% of the total quantity of water consumed per day in the facility), was being carried out by an UV system. During this field test, in 4 of the 52 tanks of culture, UV system was substitute for **OX-AQUACULTURE®** in order to disinfect water.

OX-AQUACULTURE® is an exclusive disinfectant for water used in aquaculture which contains Hydrogen Peroxide as main biocidal active ingredient. In addition, **OX-AQUACULTURE®** has been stabilized by the inclusion of the exclusive **OX-AQ Core**, suitable for aquaculture sector.

Composition: 48% Hydrogen Peroxide, **OX-AQ CORE**, excipients and water.

Advantages of **OX-AQUACULTURE®**:

- ✓ Proven effectiveness against highly resistant microorganisms.
- ✓ Unique composition and stability, for continuous use does not cause resistance, eliminating the need of disinfectant rotation.
- ✓ Rinsing is not required after application.
- ✓ Fast and efficient mode of action.
- ✓ Removal of biofilm and prevention of calcareous deposits.
- ✓ Non toxic by-products. It is innocuous.
- ✓ 100% biodegradable.
- ✓ Activity independent of physical-chemical parameters of water.
- ✓ Long lasting biocidal effect.
- ✓ It does not affect organoleptic properties of water.
- ✓ Easy control of residual by the use of colorimetric reactive strips.
- ✓ Minimal risk of overdose.
- ✓ No risk of hypoxia during application.
- ✓ Non toxic for users.
- ✓ Effective at a low dose.
- ✓ In-use concentrations do not cause material damage/corrosion, reducing maintenance and replacement costs.

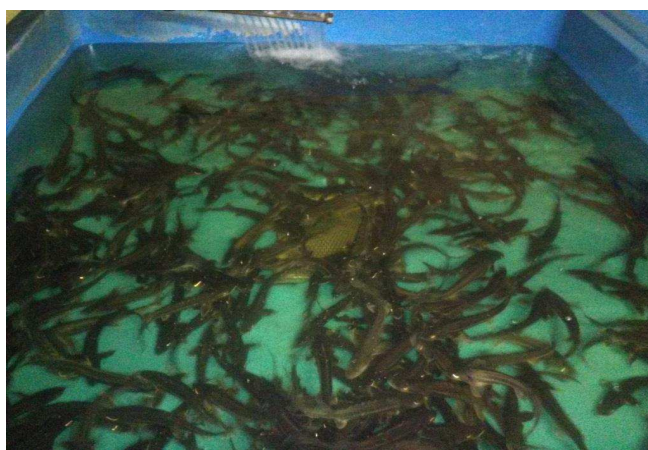
→ **METHODOLOGY:**

This field test was carried out in 4 of the 52 tanks of culture. Each tank has a capacity of 2 m³ of water with 250 young fishes each one. The mean density in each culture tank is 30-46 kg/m³.

The field test was carried out from March to June and the main zoo-technical parameters of control were the conversion index (FCR) and mortality.

The dosage of **OX-AQUACULTURE®** was 20 g/m³ in order to measure a residual of 10 ppm of Hydrogen Peroxide in the water of culture tank.

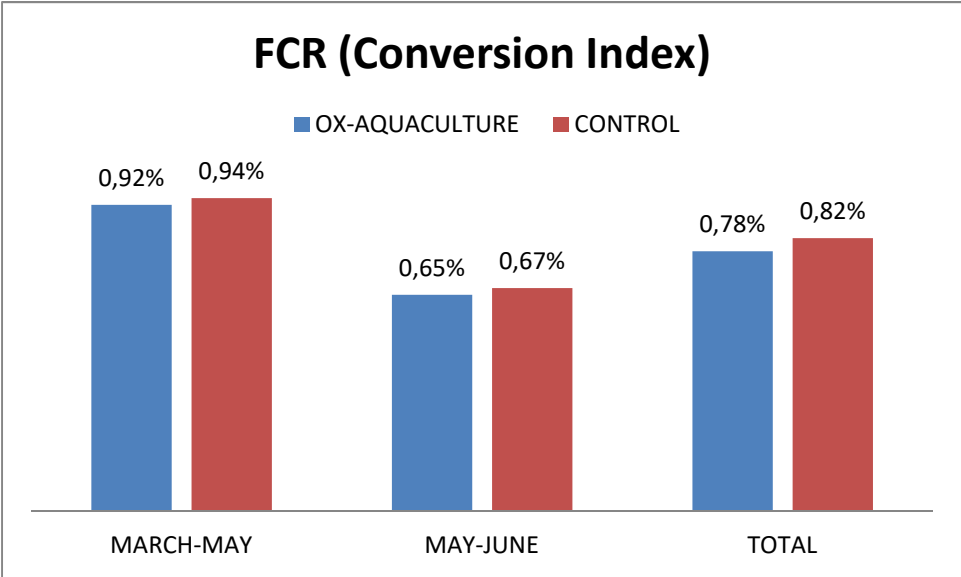
Incidence: During the field test, from 6 to 8 of March an electric black-out occurred and 20 kg of **OX-AQUACULTURE®** were consumed accidentally. Nevertheless, it is important to take into account that damages in fishes were not observed, so that, the security of product during accidental overdose moments is guaranteed.

→ **RESULTS:**

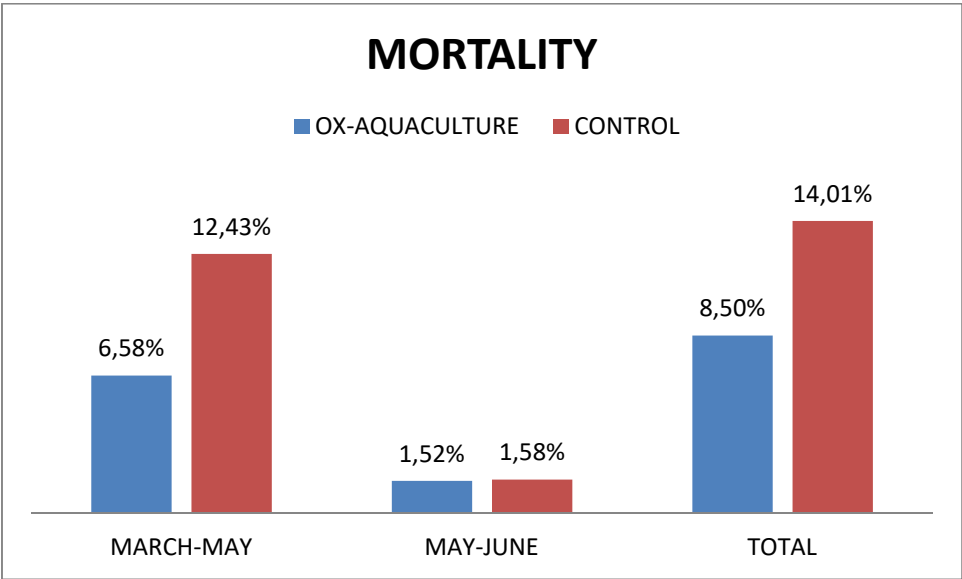
Results observed in the field test are represented in the next graphics.

Regarding FCR (Conversion Index), from the beginning of the test to the end, data of culture tanks treated with **OX-AQUACULTURE®** are most favorable than data of control (culture tanks treated with UV system instead of **OX-AQUACULTURE®**). The total difference between both cases was 0.04% (**OX-AQUACULTURE®** 0.78% - Control 0.82% = 0.04%).

It is important to take into account that a difference of 0.04% in FCR (conversion index) represents more than 18,000 kg of feed/year. This indicates that treating water with **OX-AQUACULTURE®** guarantees important savings in feed.



On the other hand, talking about mortality, also during the entire period of the field test, the data of culture tanks treated with **OX-AQUACULTURE®** are most favorable than data of control (culture tanks treated with UV system instead of **OX-AQUACULTURE®**). The total difference between both cases was 0.04% (**OX-AQUACULTURE®** 8.50% - Control 14.01% = 5.51%). This represents an important difference in economic terms.



It is important to mention that during March-May, it was confirmed a sanitary problem of bacterial origin in the productive sector where the field test was being carried out. This is the main reason why the mortality during that period is notably higher than the mortality in May-June. One important data in order to take into account is when the bacterial origin of the sanitary problem was demonstrated, control culture tanks were treated with antibiotic whereas culture tanks treated with **OX-AQUACULTURE®** did not received any antibiotic treatment.

→ **CONCLUSIONS:**

This field test demonstrates that the use of **OX-AQUACULTURE®** for water disinfection in culture of sturgeons has a very interesting ROI (Return On Investment), because it allows some advantages:

- Important savings in feed (more than 18,000 kg/year).
- Less use of antibiotics.
- Important reduction of mortality.

This test also has demonstrated that the use of **OX-AQUACULTURE®** is safe.

No problems related to the continuous use of **OX-AQUACULTURE®** have been observed in sturgeons, even during accidental overdose periods.

FIELD TEST: Use of **OX-AGUA READY TO USE®** in processing plant

→ BACKGROUND:

The present field test was carried out in a professional facility for processing of sturgeon meat and caviar located in Europe.

The cleaning and disinfection of the processing plant was properly performed at the end of every working day. During this field test, the usual protocol was enhanced with a complementary environmental treatment carried out with the combination of the efficacy and ecological nature of **OX-AGUA READY TO USE®** and the precision and the most advanced technology of the **AIR SOLUTION** nebulizer equipments

OX-AGUA READY TO USE® is an elite disinfectant for water which contains Hydrogen Peroxide as main biocidal active ingredient. In addition, **OX-AGUA READY TO USE®** has been stabilized by the inclusion of the exclusive **OX-AG Core**, suitable for food industry sector.

Composition: 7.5% Hydrogen Peroxide, **OX-AG CORE**, excipients and water.

Advantages of **OX-AGUA READY TO USE®**:

- ✓ Effective against a wide spectrum of micro-organisms: bacteria, fungi, virus and spores.
- ✓ High level biocidal efficacy.
- ✓ Its use does not cause the appearance of phenomena of microbial resistance.
- ✓ Effective in a wide temperature range.
- ✓ Non toxic by-products (100% biodegradable).
- ✓ Non toxic for people, animals and environment.
- ✓ Easy control of residual by the use of colorimetric reactive strips.
- ✓ In-use concentrations do not cause material damage/corrosion, reducing maintenance and replacement costs.

The innovative nebulization system of the **AIR SOLUTION** equipments guarantees the effective treatment even of the most inaccessible places. The effectiveness of the system for dispersion of microdroplets of OX products, added to the equipment ease of use (it is mobile), give to the range of **AIR SOLUTION** equipments, wide versatility and reliability for disinfecting surfaces and ambient.

OX BIO-TECH DISINFECTION is totally effective against highly resistant microorganisms in Food Industry, Hospitals and Pharmaceutical Industry. **OX BIO-TECH DISINFECTION** guarantees the control of aerobic bacteria, *Coliforms*, *Pseudomonas* and, by shock treatments, even *Listeria monocytogenes*. Moreover, it is effective against fungal spores and vegetative cells of *Aspergillus*, *Penicillium*, *Mucor*, *Alternaria*, etc.

→ **METHODOLOGY:**

This field test was carried out in June 2016 in the main processing plant of the company, including areas with different risk levels such as evisceration tables, packing room and white room.

The dosage of **OX-AGUA READY TO USE**® was carried out with the **OX-BIOTECH DISINFECTION** technology in order to measure a residual of 10-20 ppm of Hydrogen Peroxide by placing colorimetric strips all around the treatment area.



Samples were strictly taken before and after treatment from the main critical control points including areas that are usually inaccessible for a standard disinfection, that are considered to be the most important ones in order to avoid the contamination of the final good:

Environmental samples:

- Top surface of the electric panel.
- Top surface of the working table.
- Top surface of the sliding door.

Contact samples:

- Working room surface (steel).
- External wall.
- Evisceration plate (steel).
- Floor.



→ **RESULTS:**

Results observed in the field test are highlighted in the next tables.

Environmental analyse	TPC (UFC/m ³)		Molds (UFC/cm ²)		Yeasts (UFC/cm ²)	
	BEFORE TREATMENT	AFTER TREATMENT	BEFORE TREATMENT	AFTER TREATMENT	BEFORE TREATMENT	AFTER TREATMENT
Electric panel	19	6	8	1	0	0
Working table	63	2	16	5	0	0
Sliding door	N/A*	0	N/A*	15	N/A*	0

*Plates counts were too high to be read.

While microorganisms counts were over the hygiene standards for a food processing plant even after having carried out a standard cleaning and disinfection treatment, they improved a lot by performing a complementary environmental disinfection treatment with **OX-AGUA READY TO USE®**.

Molds were also significantly reduced after the aerial disinfection treatment, taking into account that once they are fixed to the surface they are a highly resistant microorganism against most of biocidal products.

Surface analyse	TPC (25 cm ²) (UFC/m ³)		Coliforms (UFC/cm ²)	
	BEFORE TREATMENT	AFTER TREATMENT	BEFORE TREATMENT	AFTER TREATMENT
Working surface(steel)	>300	192	>300	163
External wall	41	3	9	0
Evisceration plate (steel)	23	0	3	0
Floor	>300	10	>300	0

The treatment was not only effective with regard to the environment but also for the surface hygienic conditions. Regarding coliforms, they suffered as well a significant reduction, especially in working surfaces and evisceration plates, greatly minimizing the risk of cross contamination.

→ **CONCLUSIONS:**

Results obtained during the trial show that some critical control points of the processing plant were not in the proper hygienic conditions that are required for guarantee an innocuous good for the final consumer.

Environmental disinfection constitutes a necessary complement that guarantees the treatment even of the most inaccessible places.

This field test demonstrates that the use of **OX-AGUA READY TO USE®** combined with the advanced technology of **AIR SOLUTION** equipments for environmental disinfection has a very interesting ROI (Return On Investment), offering some advantages:

- Lower disinfectant consumption (1L/h/1000m³).
- Minimization of contamination risks (recalls, economic losses).
- Time saving for the cleaning and disinfection staff.
- Consumer confidence.
- Absence of toxic residues (100% biodegradable).