

ROBOOST

rotifer booster selco®

Fresh yeast booster for a perfect rotifer culture



With the selco product line, INVE Aquaculture has long been the pioneer in dry batch rotifer culture products. RoBoost selco offers you the ultimate solution for one of marine fish aquaculture's biggest bottlenecks: rotifer culture.

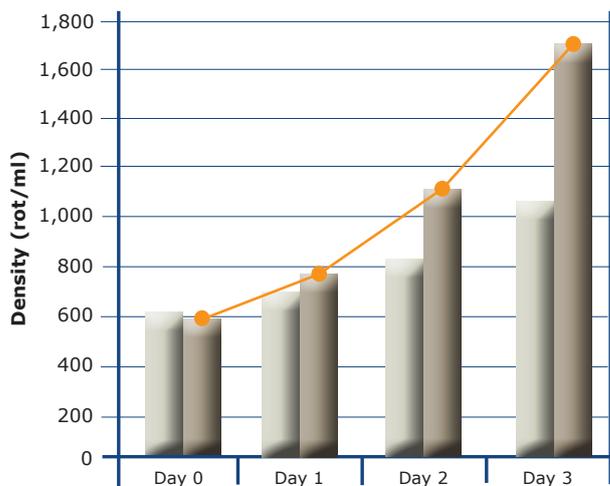
Compared to traditional dry diets, the use of fresh yeast boosted by the specific ingredients of RoBoost will result in a very clean culture, with rapidly growing rotifers containing already excellent nutritional characteristics. Starting from the first day of use, the population will exhibit excellent motility and a large number of eggs.

RoBoost is available off-the-shelf, ready to be mixed with yeast in the water.

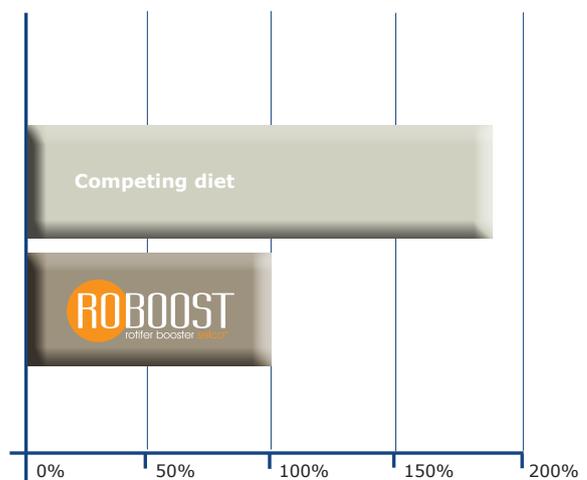
- ✓ Boosts the fresh yeast's activity
- ✓ For a clean and easy rotifer culture
- ✓ Adds essential nutritional qualities to the rotifers

PRODUCT CHARACTERISTICS

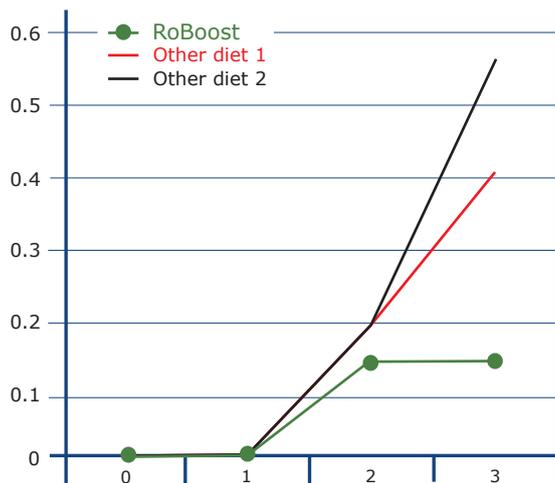
SUPERIOR GROWTH



COST-EFFICIENT



LOW CILIATE CONTAMINATION



CLEAN



RoBoost compared with a standard dry diet is more clean during and at the end of the culture reducing the risk of contamination and keeping optimal water parameters during the culture.

TYPICAL COMPOSITION

| | |
|---------------------|---------------|
| crude protein | 31% |
| crude oils and fats | 28% |
| crude ash | 9% |
| phosphorus | 1% |
| sodium | 0.5% |
| crude fibre | 0.5% |
| calcium | 0.1% |
| DHA | 80 mg/g dwt |
| EPA | 8 mg/g dwt |
| ARA | 0.35 mg/g dwt |
| vit. A | 140,000 IU/kg |
| vit. D3 | 14,000 IU/kg |
| vit. E | 5,000 mg/kg |
| vit. C | 20,000 mg/kg |
| Ethoxyquin | 100 mg/kg |
| BHA | 20 mg/kg |
| Propyl gallate | 20 mg/kg |

RoBoost is formulated using premier marine ingredients, following INVE Aquaculture's stringent quality requirements. We source our ingredients only from certified and respected suppliers.

It does not contain feed materials derived from terrestrial animals.

With regards to sustainability: as of 2013, INVE Aquaculture has applied criteria for sourcing fish meals and fish oils. These ingredients are purchased from suppliers whose products originate from responsibly managed fisheries (through IFFO RS certificates or equivalent).



INSTRUCTIONS FOR USE

PREPARING THE TANK

Using e.g. 200 g/m³ active chlorine + detergent, clean and disinfect the culture tank, airstones and air tubing prior to use.

Disinfect the water of the tank with e.g. 10 ppm active chlorine & aerate gently for ±1 hour.

Deactivate any remaining chlorine by adding 12 ppm sodiumthiosulphate.

Place airstones 15 cm above the tank bottom, along the periphery and also in the centre to allow sedimentation and flushing of waste particles.

Aerate by the use of airstones: sufficient to keep the rotifers in suspension but at the same time allowing debris to deposit.

The use of suspended or airwaterlift floc traps, is advised to ensure a clean culture by the removal of waste floccules and Vorticella.

OPTIMAL CULTURE CONDITIONS

- Temperature 25-27°C
- Salinity 20-30 ppt¹
- Dissolved oxygen 5-7 ppm²
- NH₄⁺ < 20 ppm;
- NH₃ < 1 ppm
- pH level of 7 to 8,5

The use of additional oxygenation systems is essential to maintain a minimum oxygen level of 4 ppm during the entire culture period.

¹ ppt = parts per thousand or 1:1,000

² ppm = parts per million or 1:1,000,000

PREPARING THE PRODUCT

Ratio RoBoost-yeast

The product has to be used on a ratio of 100g RoBoost and 500g fresh baker's yeast and up to 5 liters of water. For example: for a 10l bucket use 1kg of fresh baker's yeast and 200g RoBoost.

The fresh baker's yeast

To obtain optimal results, it is important to use good quality fresh baker's yeast. As it is highly perishable it should always be kept in the fridge and used within the "use by" date.

Preparation of the product

1. Fill a bucket with luke warm fresh water (35-40°C);
2. Add the required amount of RoBoost;
3. Switch on the (industrial) blender, creating a vortex;
4. Start adding the fresh baker's yeast;
5. Continue mixing for 3 min to make sure everything has been dissolved completely and to obtain a homogenous dispersion.

This feed preparation can be stored for maximum 24 hrs at a temperature below 15°C.

Note: Always carefully check the dispersion of the product.

CULTURE FEEDING STRATEGY

| Rotifers/ml | Suggested amount of yeast/RoBoost mixture |
|-------------|---|
| 500 | 1.1 g per million rotifers |
| 750 | 0.9 g per million rotifers |
| 1,000 | 0.75 g per million rotifers |
| 1,500 | 0.65 g per million rotifers |
| > 1,500 | 0.6 g per million rotifers |

Feed the daily quantities in 4 to 6 rations or use a continuous feeding device. Never exceed a maximum daily feeding of 600 mg per liter. Optimal results for batch culture are obtained starting at 500 rot/ml.

During the first culture day, start with 1,1 g of mix per million rotifers. Regardless of the density, a "background feeding" needs to be applied at the time of inoculation. This is necessary to provide an initial feed cell density in the culture tank that is high enough for the rotifers to immediately start an efficient filtration.

From the first culture day quantity, use the following as background feeding:

- for low density (300 rot/ml): 80 mg/l;
- for medium density (500 rot/ml): 100 mg/;
- for high density (1000 rot/ml): 120 mg/l.

Note: product management, handling and storage are as important as the product itself. Please follow the instructions for use and storage instructions carefully to obtain the best possible results from our high quality products.

AVAILABLE PACKAGING

RoBoost is available in cardboard boxes of 4 x 750 g alufoil bags. Each alufoil contains 10 soluble bags of 75 g each.

STORAGE/SHELF LIFE

The product should be stored in a cool, dry place (max. 10°C). Once opened, it should be used within one month, kept well closed when not used and stored in a refrigerator. Do not freeze.

The shelf life is 12 months from date of manufacture.

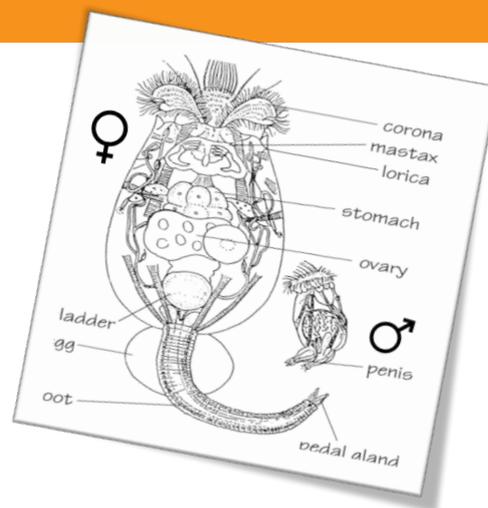
A QUICK GUIDE TO ROTIFERS

GENERAL INFO

| | |
|------------------------------|-----------------|
| Life span | 3 to 15 days |
| Time to reach adult stage | 0.5 to 1.5 days |
| Average offspring/female | 10 to 20 |
| Time to hatch (amictic eggs) | max. 1 day |

Rotifers are **non-selective** filter feeders: only the particle size is important and needs to be less than 20micron.

Their feed uptake depends on the temperature & salinity of the culture water, but also on the quality and quantity of the feed.



DIFFERENT TYPES OF STRAINS

| Rotifer strain | Size (µm) | Optimal temp |
|----------------|-----------|--------------|
| Rotundiformis | 80-100 | 28-30°C |
| Cayman | 180-160 | 26-28°C |
| GBA | 240-260 | 25°C |
| Nevada | 250-280 | 23-25°C |

Different rotifer strains are very competitive (survival of the fittest).

Generally speaking smaller rotifers (Rotundiformis, Cayman) grow at both higher densities and at a faster rate.

However, the produced biomass is more or less comparable among the different strains.

THE IDEAL CULTURE ENVIRONMENT

Temperature

The optimal temperature for culture depends on the rotifer strain. The ideal temperature for batch culture is:

- 25°C for the L-type
 - 28°C for the SS- type
- Avoid temperatures above 30°C.

By increasing the temperature, the rotifer's metabolic and reproduction speed will increase. Therefore, at higher temperatures, more frequent feeding becomes crucial.

Dissolved oxygen levels

Minimal: 4ppm
Optimal: 100% saturation (6.5 to 7.5ppm)
Avoid levels of >15ppm

Salinity levels

- Salinity levels affect the rotifers' nutritional composition.
- Euryhaline: 1-60ppt is tolerated
- Salinity shock: change only few ppt in short periods

Reproduction for *B.plicatilis* (Lubzens at al., 1985) >35ppt: low asexual reproduction $G=0.30 d^{-1}$ & reduced feed filtration speed; 30ppt: $G=0.4-0.5 d^{-1}$ Optimal salinity 25 ppt: $G=0.5-0.85 d^{-1}$.

pH-levels

Acceptable pH-levels are between 5 and 9, depending on the food source. Increasing pH by 1 unit will increase the % of NH_3 around 10 times. Lower pH-levels means the equilibrium shifts towards less toxic un-ionized ammonia. However, less NH_3 can be tolerated at lower pH-levels.

HARVESTING SUGGESTIONS

Harvesting rotifers properly is often one of the keys to a successful enrichment. It is possible to improve the harvest by following these pointers:

- Be gentle: always handle rotifers with care
- Make sure the rotifers are submerged at all times
- Prefilter to retain dirt particles and avoid filter clogging
- Use a soft bag filter
- Avoid splashing by using submerged tools
- Keep DO above 4 ppm at all times
- Use water with same T° to avoid thermic shocks

KEYS TO A SUCCESSFUL ENRICHMENT

The same abiotic parameter ranges should be followed as for the rotifer culture (as described above).

It is important to know that rotifers, during the enrichment stage, will preferably take up oil droplets, making them "lighter" and allowing them to float on the water surface. Especially in separate enrichment tanks with clear water, this floating phenomenon will occur.

To avoid this, add a small quantity (50ppm) of culture diet in order to increase the viscosity in the enrichment tank.

For more information, please contact your local INVE Aquaculture Service Center or take a minute to visit our website: www.inveaquaculture.com

To the best of our knowledge, the technical data in this technical card is accurate and reliable as of the date of publication. We do not assume any liability for the accuracy and completeness of the above information. Please inspect and test our products in order to satisfy yourself as to the suitability of the products to their particular purpose.

