

# Ghent Laboratory of Aquaculture & ARC

**WHILE** Belgium may be more famous for its chocolates than its fish farms, aspiring aquaculturalists have been descending on the Flemish city of Ghent for over 35 years, to an institute that has become a world leader in research into the larval stages of fish and shellfish.

Ghent Laboratory of Aquaculture & Artemia Reference Center (ARC), as it is now known, has its roots in the early 1970s, when Ghent University's Laboratory of Ecology began to look into the use of brine shrimp (*Artemia*) as live food in aquaculture.

Thanks to its ground-breaking work on applications of brine shrimp in aquaculture, the FAO bestowed on the research unit the title of 'Artemia Reference Center' in 1975. In view of an expansion of research and training activities to larviculture in its broad sense, the name 'Laboratory of Aquaculture & Artemia Reference Center (ARC)' was then adopted in 1989. In 1990, Patrick Sorgeloos, who had been involved in the project since the 1970s, was officially appointed as laboratory director.

## Courses

As the institute's reputation for larviculture R&D grew, it was frequently invited to organise short training courses for students from around the world – which were held both in Ghent and abroad. In 1991, however, the institute was urged to organise its first 2-year Masters programme, which was targeted at international students – especially those from Africa, Asia and Latin America.

Jean Dhont, who coordinated the course between 1994 and 2000, points out that: 'there's a diverse range of students, mainly from Africa and Asia, which makes for an interesting and rewarding combination of people.'

'Prospective students need to be qualified up to BSc level and be proficient in English. This can, however, be difficult to measure, so we highly value recommendations from colleagues in universities and institutes we've developed a relationship with already.'

'We've recently included an internship as part of the MSc, which gives students a chance to spend 6-8 weeks working on small research projects within the aquaculture industry. These take place in countries ranging from Vietnam to Mozambique and we ensure that students always undertake these placements outside their native country, and – ideally – on a different continent too, to help expand their horizons.'

As well as evolving from an institute that offers short courses into one that provides full scale Masters and PhD programmes, there have also been a number of other changes, Jean reflects.



'There's been an increase in students from within the EU, thanks in part to the Bologna process, which eradicated some barriers for mobility and encouraged European students to go further afield within Europe. Studying in Belgium is also relatively cheap compared to studying in the UK, for example, and we are now seeing to number of EU students rise from roughly one per intake to about 5 a year – mainly from Britain, France, Spain, Italy and Holland.'

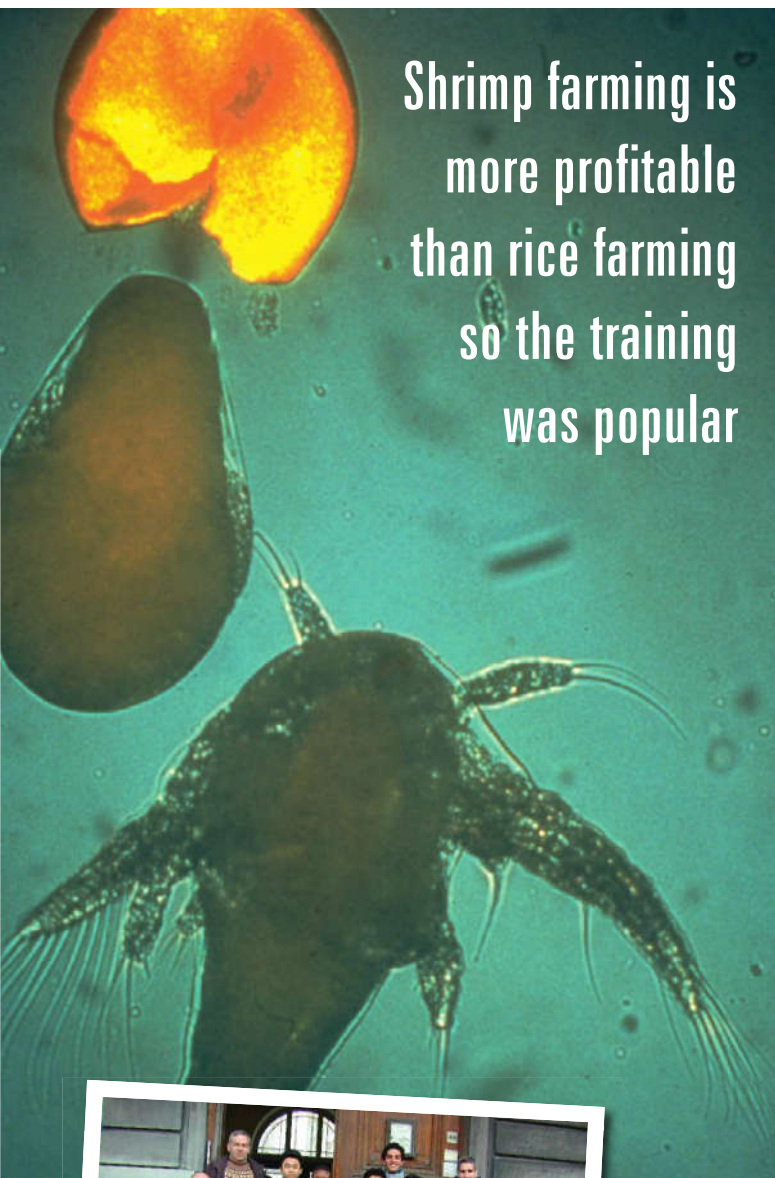
'We notice an increasing number of – mostly – Asian students who no longer rely on our Belgian scholarships but manage to tap into their own national funding schemes. As academic levels in Asia improve, we even expect to encounter a decline of Asian students that no longer see the need to travel when they can find good level education locally. Therefore we have recently pursued the strategy to reinforce alliances with strong partners in, for instance South Africa, China and Vietnam, in a process to develop joint Masters and PhD programmes,' says Peter Bossier, current director of the MSc programme.

'Over half of our graduates go into the world of research and academics – many of whom later progress to having leading positions in their institutes or policy-making and government management roles, while roughly a third to a quarter go straight into the aquaculture industry. Owing to our multi-disciplinary approach, graduates find job opportunities in very diverse aquaculture ventures but have a particular edge in marine fish and shrimp larviculture.'

Above: a PhD student from Cameroon on a placement in Vietnam

Students spend 6-8 weeks working on placements within the industry

Shrimp farming is more profitable than rice farming so the training was popular



From top: an Artemia larva hatching out of a cyst; a typical year group; a study trip to an oyster farm in France

### CASE STUDY – Nur Ahyani

As part of his course Nur Ahyani went on a shrimp farming placement in Khuylna, Bagherat and Satkira, in Southern Bangladesh. Here he reflects on the experience.

'By joining the farmers' meetings and training, I could work out how the project was approached by the farmers, even though it was conducted in their local language. Farmers in southern Bangladesh do not speak English, therefore, during the field trip, WorldFish staff always accompanied us. Farmers behaved well during the interviews and it was apparent that farmers were satisfied with the shrimp farms.'

'People showed their enthusiasm by asking a lot of questions – especially related to the problems faced in the field. Day-to-day people in southern Bangladesh are more interested in doing shrimp farming, as it is more profitable than rice farming. However, many of these people had no knowledge of shrimp farming management to back up this enthusiasm. Therefore, the project assisted them in technical aspects and also encouraged women to be involved in the enterprise. Gradually, it will improve the role of women in the household and increase gender equality.'

### CASE STUDY – Le Van Bao Duy

Vietnamese student Le Van Bao Duy reflects on his 6-week placement at Southeast Asian Fisheries Development Center (SEAFDEC/AQD) in the Philippines.

'During the 6-week internship at SEAFDEC/AQD, I learned a lot of techniques as well as the comparison between the theories in practical cases.'

'Larval rearing of mud crab was quite successful in the hatchery; survival rate after metamorphosis from zoea 5 to megalopa was around 3%. The polyculture of milkfish and crab in earth ponds was successful and mud crab will not escape from the ponds if we provide good and high quality food.'

'Survival rate of rabbit fish from hatching until day 28 was around 35% (slightly higher than the usual 30%), while for red snapper from hatching until day 32 was 20%.'

'The availability of VNN diseases in seabass larval rearing caused mass mortalities. The E-11 cell line was successful cultured on laboratory scales. The VNN virus growth can be used for vaccination of Asian seabass.'

'After 3 days of induced spawning by injection, the groupers did not spawn because of bad weather. Grouper larvae were also very difficult to rear, because of VNN disease, cannibalism and diet-related problems.'

'The culture of algae and rotifer from 1L to 1 tonne were very successful, except on one occasion, when the culture of Chaetoceros collapsed because of contamination. The outdoor commercial systems of algae and rotifer culture using sunlight were very cheap and successful.'

'During the stay at SEAFDEC/AQD, I not only learned technical but also social experiences. Firstly, after several field trips to farms, my communications skills with the farmers and other trainees improved, so a lot of interesting experiences and information were exchanged. Secondly, the communication skills with the technical staff were also improved.'