



Cromaris – Croatia's biggest seabass and seabream producer

Expanding product line with organic fish, meagre, and shellfish

Croatia was one of the pioneers of the farmed seabass and seabream farming industry in the Mediterranean, experimenting with artificial spawning techniques that would enable females to spawn several times in the year and with feeds that would provide the newly hatched larvae with nutrition. By the mid-seventies Croatia had a small commercial production of seabass and seabream.

Other countries in the Mediterranean had however also been conducting trials and the initiative soon shifted from Croatia to Italy, Spain, Turkey and Greece. Production in these countries soon exceeded output in Croatia, where the political problems in the 90s further constrained the development of the industry. In 2009 the Adris Group, a company with interests in tobacco, tourism, distribution and retail, consolidated three long-established players in the seabass and seabream farming sector, Cenmar, Marimirna, and Marikultura Istra, to form Cromaris. Today Cromaris is a fully integrated producer of seabass and seabream, which is the core of the production, and in addition, is farming meagre (*Argyrosomus regius*) and bivalves – mussels and flat oysters.

Seabass, seabream production spread over five sites

Cromaris today is the biggest Croatian producer of farmed fish by a long margin. Estimated production for 2014 is 5,000 tonnes and is set to expand further. In contrast, the second biggest farmer of fish in Croatia has an output perhaps ten times less than that of Cromaris. The industry is quite fragmented in Croatia with one company sitting at the top of the

pyramid, another five or so with a production of 200 to 500 tonnes and then a broad base of about 20 farms each producing about 50 tonnes. At Cromaris the seabass and seabream farming is spread over five sites, Lim and Budava in the northern part of the Adriatic, and Lamjana, Košara, and Dugotok in the central Adriatic. In addition there is a hatchery at Nin in the central Adriatic, which is currently being completely restructured and renovated. The shellfish production is also in the north, in the Lim Bay and the Budava Bay in Istria.

The company has invested heavily in technology to improve the quality of the final product. The commitment to quality starts already with the site selection and extends to all aspects of the production including proper handling all the way through the fish's life cycle from larvae to the market-sized product. All our sites are in areas that are completely free of any kind of pollution, says Lovre Peraić, the brand manager, and the feed the fish receive is from internationally recognised brands. The company is very particular about testing the feed in its in-house laboratory to make sure that the feed conforms to the declared specifications and contains no gmo's (genetically modified organism) or terrestrial animal protein. As one of the ways



Marko Domijan (left), Farm Manager at the Lamjana site, and Lovre Peraić, Brand Manager

of monitoring the feed Marko Domijan, the farm manager at the Lamjana site, maintains trial cages that mirror the production cages. Thus, whatever feed is given to the production cages, the same procedure will be repeated in the trial cage. This way says Mr Domijan, if there are any problems in the production cages we will immediately check the trial cages to see if the problem is reflected there. If it is, then we will know the feed is very likely the culprit.

Market sized fish of 400 g is the main product

While the company can produce fish of 1-1.5 kg the most commonly produced size is 400 g. This is due to a combination of market demand as well as the realities of

production. Producing 1 kg fish will require the number of cages to be doubled and will therefore need a larger site. In addition, the fish will have to be kept for two more feeding seasons, so costs multiply prohibitively. As a result most producers grow the fish to 400 g keeping a few which they grow to 1 kg. At Cromaris the fry are introduced into the cages from spring to October. The fry introduced in spring reach market size in 18-20 months. While those put in the cages in autumn will take over 24 months to reach market size as the fish do not grow in winter even though they are fed. In the second year the fish lose weight again due to spawning and need to compensate for this loss through the feed. It is thus cheaper and better for the cash flow to farm fish to 400 g and place them on the market.



Cromaris is the single largest producer of seabass and seabream in Croatia. Total production including small volumes of dentex and meagre was about 5,000 tonnes in 2013.

The fish are fed using different methods. Here the fish (seabream) themselves nudge a trigger to release the feed.

In addition to seabass and seabream Cromaris is now producing its second generation of meagre. This is a fast growing and tasty fish, the problem however is that because it is a new species the market for it is still small. Building a market is a long term and expensive strategy and will take a dedicated effort as consumers are generally conservative. Seabass and seabream are today well established species with a high degree of market acceptance, but it has taken 30 years for them to reach where they are today. Cromaris is promoting meagre using public relation shows and articles in newspapers and is hoping to see consumption to pick up in the future.

the upgrade the hatchery will be able to produce 30m fry in two years and supply all the on-growing sites including Lamjana, which is located off Ugljan an island close to Zadar. Lamjana is Cromaris' second-biggest site and is divided into four areas, depending on the weight of the fry. The fish grow from 3 g, when they are introduced into the cages, to 100 g in the first area. Here the cages are 16 m in diameter while the net has a depth of 13 m and a mesh size of 8 mm. The area is safe for the fish, currents are not strong and the cages are easily accessed for maintenance

and to feed the fish. This is particularly important as at this stage the fry eat 5-7 times a day and the feeding is done manually. Once they reach 100 g the fish are moved to the second area, where the cages are bigger and the feed is delivered by feeding cannons installed in a boat. From 200 g to market size of 400 g the fish spend in the third area. Here the cages receive the feed automatically from a feed barge. This is a Norwegian system that dispenses the feed at regular intervals. Hoses from the barge connect to the cages and at fixed intervals the feed is propelled

through the hoses by air under pressure and is flung out from a rotating disperser in the cage which distributes it evenly at the water surface. The entire feeding process is monitored both at the surface and at a depth by cameras that transmit back to screens on the barge, so that the staff can see how the fish are feeding and interrupt the flow of the feed if necessary. As feed is 50% of the production cost preventing wastage is paramount. The system is so efficient that it requires just two people to feed and monitor all the cages at the site.

Continuous programme of investments

Since 2009 when Cromaris was established and up until 2012 the company has invested EU30m in farming and processing technology. A further EUR20m is being invested in the hatchery to rebuild it completely. Currently the hatchery produces seabass, seabream, and dentex fry, however, the volumes are not big enough for the company's requirements and it is forced to import 40% of the fry it needs. With



A feeding barge is used to supply feed to the cages with the largest fish.



As the fish grow in size the cages get bigger too as well as the mesh size of the net. The smaller the mesh the greater the impact of fouling as it tends to block the mesh and prevent the free exchange of water. This can result in a lack of oxygen in the water in the cage and so it is important that the nets are regularly removed and cleaned. The nets are cleaned in large rotating drums simply using water and friction. Using nets with chemical anti-foulants would reduce the maintenance, but their use is incompatible with some of the certifications the company has achieved and is no longer permissible.



The company has its own chain of eight retail outlets in Croatia.

A network of ropes supports the cages anchoring them in place. Mr Domijan estimates that there are about 20 km of ropes at the Lamjana site. These ropes provide a substrate for the mussel spat that occurs naturally in the Adriatic. As a result, each meter of rope has some 7 kg of mussels growing on it. These mussels form part of the Cromaris mussel production. The mussel-bearing ropes are taken out of the water and taken to a site where the mussels can grow to commercial size. Last year mussel production amounted to 100 tonnes. In fact, if the mussels are allowed to grow undisturbed they will either sink the cages or break the ropes, so they have to be removed in any case. The fourth area at the Lamjana site is where the company maintains its experimental cages. These are small cages where the growth rate of the fish using a certain feed is monitored, trials are run for new species, and other tests are carried out.

Fresh fish in Italy within 24 hours of harvest

The fish is typically harvested from the cages at 06.00 in the

morning and is then placed on ice in large thermally insulated tubs. These tubs are then sailed back to the delivery facility from where they are taken on to the sorting and processing factory in Zadar. Sixty-five percent of the production is exported and one of the biggest export markets is Italy. The importance of the Italian market is such that in 2013 Cromaris opened a branch in Italy, Cromaris Italia S.r.L. The company has a second sorting facility in Istria in the north and very close to the Italian border. Depending on where the fish has to go in Italy it can reach its final destination within 24-36 hours of being harvested. If the fish has to go to the south of Italy it would travel by ferry to Ancona, a journey of some 8 hours, and then be distributed from Ancona, for example, to Rome which takes a further 6 hours. Going to Verona and being distributed from there means the fish can be placed on the market within 24 hours.

Cromaris currently produces about 5,000 tonnes of seabass and seabream and has reached

its maximum capacity at some of its production sites. At Lamjana, for instance, Mr Domijan is in the process of applying for a new license that will expand capacity by about 30% from 1,800 tonnes to 2,500 tonnes. The company is not just looking at increasing its volumes, but also at other niches. Among them is the organic production of seabass and seabream.

Cromaris Organic is the name of this new line of products which is intended for markets in Western Europe. Production today is a modest 100 tonnes, but it is set to double over the course of next year. Apart from the market in Italy, the company also has customers in Austria, the Czech Republic, Poland, and Slovenia and is in discussions with potential clients in France and the UK.

Cromaris

Gazenicka cesta 4/b
23000 Zadar
Croatia

Tel.: +385 23254960

Fax: +385 23250883

info@cromaris.hr

www.cromaris.hr

Brand manager: Lovre Peraic

Farm manager: Marko Domijan

Activities: Fish farming, processing, sales, distribution, marketing

Species: Seabass, seabream, meagre, common dentex, mussels, flat oysters

Volume: 5,000 tonnes

Facilities: Hatchery, five cage farming sites, processing facility

Products: Fresh fish, fillets, smoked fillets, marinated fillets, organic seabass and seabream, shellfish

Packaging: Fresh on ice, fresh in MA packaging, vacuum packaged, wooden containers for the flat oysters

Markets: Italy, Poland, Austria, Slovenia, France, Germany, Czech Republic, Croatia

Certifications: ISO 2001, 14001, 22000; IFS; FSSC; Naturland, Bio Siegel, AB, EU Organic

Employees: 307

Turnover: EUR25m