Market and domestic production of cultured tuna in Japan-cultured tuna in the Japanese market

Ikeda S.

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S. Ikeda
Aquanet, Japan

SUMMARY – A short summary is given of the occurrence and extent of bluefin tuna farming in Japan. The methods used are described and compared with Mediterranean farms. The influence of this cage culture on Japanese markets is reviewed.

Key words: Bluefin tuna farming, Japanese tuna market, cages, survival rates, TORO.

RESUME – *"Marché et production nationale de thon d'élevage au Japon – Thon d'élevage sur le marché japonais". Un bref résumé est présenté sur l'existence et la portée de l'élevage du thon rouge au Japon. Les méthodes utilisées sont décrites et comparées à celles des fermes méditerranéennes, et l'influence de cette culture en cages sur les marchés japonais est passée en revue.*

Mots-clés : *Elevage du thon rouge, marché japonais du thon, cages, taux de survie, TORO.*

Bluefin tuna farming in Japan

In Japan, there are about 20 bluefin tuna farming and research stations. From their farms, 300 to 500 t are harvested per year. Their farms are located in central and southern Japan, nearly Wakayama, Ehime, Kochi, Nagasaki, Amami (Kagoshima) and Okinawa Pref.

Bluefin tuna farming in Japan starts in July or August when 150-500 g tunas are caught and stocked into the cages. These small tunas are caught by the fishermen and sold to the farmers. They are reared for 3 to 4 years until they grow to a body weight of about 30 kg to 70 kg.

According to the method followed by Kinki University, the fish are reared for the first 4 or 5 months in 12 m _ 12 m square cages. After this period they are transferred to large cages. For example, 50 m diameter circular cages or 20 to 40 _ 40 to 60 m rectangular cages, without a frame using just floats to hold the net.

The farming method in Japan is different from that used in the Mediterranean, for example, if a 20 kg tuna is caught in Japan, the fisherman can get better price at the fish market immediately, rather than if sold to the farms. This is why Japanese tuna farmers prefer to stock smaller tuna. Also, the small tuna which are stocked in cages show a better survival rate than if they were left in the wild.

In the cages, tunas are fed on fresh or frozen sand eel, anchovy, sardines, mackerel, jack mackerel and squid. To them, a vitamin mix is also added. FCR up to 40 kg is 10 to 14, over 60 kg is 14 to 20, on a wet matter basis.

In the case of Wakayama, Kinki University, growth is as following for this broodstock data. A 150-500 g small tuna reaches 3 to 8 kg after one year, and 10 to 30 kg after two years, and maximum weight of 50 kg after 3 years.

In comparison, tunas farmed at the research station JASFA in Okinawa, reached 100 kg within 4 years, probably because of higher average water temperature. Also seawater currents and stocking density, may be factors that affect growth rate.

In the large cages, survival rates are 90% or higher. But in 3 to 4 years, feed expenses, labour costs, equipment costs, etc. create a very high cost. So, for the farm to make a profit when selling to

the fish market, the price must be at least 5000 yen/kg. Consequently, main sales focus on large cities such as Tokyo and Osaka.

On the other hand, in terms of colour, fat content and taste, generally Japanese farmed tuna are superior to Mediterranean farmed tuna.

However, there is a limit for the consumption of this expensive tuna, so if the yearly production of Japanese cultured tuna is to increase, then the production cost must drop but the market price will also drop.

Japanese tuna market

The supply of tuna (total production of domestically culture, wild-caught, imported fresh and frozen fish) indicates values that range from 451,000 t to 507,000 t per year during the last four years. It should be noted that the ratio of fish with a high product value, known as TORO in Japanese, is decreasing. TORO forms only approximately 30% of wild-caught tuna, so the figures for 2001 indicate that only 137,000 t of TORO were obtained. On the other hand, almost all cultured tunas are TORO and although this has only a 4% share of all tuna provided to the Japanese market, it increases the supply of TORO products by 15%. Moreover, to obtain the same quantity of TORO provided by 20,000 t of cultured tuna, it would be necessary to catch 70,000 t of wild tuna. The advantages of cultured tuna are that it could be supplied at a third or half the price of wild-caught bluefin or southern bluefin tuna, and that its available at supermarkets, fresh fish shop or KAITEN-ZUSHI restaurants throughout the year.

Then, nearly all of the cultured tuna consists of the high quality TORO, the supply of TORO has recently increased, so the price of TORO may drag down in the future. In addition, the demand for cultured bigeye and yellowfin tuna is expected to increase, because the fatty meat of albacore, TORO-BINCHOU, is also accepted by consumers. And fatty but cheap tuna's (bigeye and yellowfin) lay down a further potential demand for tuna on the market as valuable intermediate products between conventional cultured tuna and TORO-BINCHOU.

However, farmers must think wisely about this, as the supply of the TORO of these two species will also drag down the price of bluefin TORO.