Trout

Oncorhynchus mykiss

Biology

The rainbow trout (*Oncorhynchus mykiss*), named after the many rainbow-coloured spots on its skin, is one of the main species bred in freshwater. Native to the Pacific coast of the United States, it was brought to Europe at the end of the 19th century and today it is farmed in nearly all European countries.

The rainbow trout is a hardy fish. It tolerates a wide range of environments and handling. It can occupy many different habitats, moving from freshwater to saltwater and back, or staying permanently in lakes. The optimum water temperature for breeding is below 21°C. Growth and maturation are influenced by water temperature and food. Under normal conditions, trout usually mature at 3-4 years. They are carnivorous and need a diet rich in protein. In the right environment, a trout can grow to 350 g in 10 to 12 months and to 3 kg in two years.

Farming

Trout larvae are reared in round tanks made of fibreglass or concrete, which maintain a regular current and a uniform distribution of the larvae.

The larvae hatch with a yolk sac that contains the food they need for their initial development. Once the sac has been absorbed, the fry swim up to the surface to look for food and begin to regulate their buoyancy. They are fed small flakes (proprietary feed) containing protein, vitamins and oils. Hand feeding is preferred in the first stages of rearing to avoid overfeeding. The fry are then fed small pellets until they reach a weight of 50 g and are 8 to 10 cm long.

At this point, the young fish are transported to grow-out units, either floating cages in lakes or, more often, tanks located beside a river. These tanks, which are generally rectangular in shape and made of concrete, operate on two techniques: flow-through, an open system where river water flows through the units via a raceway; or recirculation, a closed system that consists of circulating water in the tanks and recycling it or a system with partial recirculation. The advantage of recirculation is that the water temperature can be controlled all year long, so that effluents to the environment are very limited.

Trout are also grown in floating cages at sea, in the low-saline waters of the Baltic and in the protected waters of the Scandinavian fjords, and off the west coasts of Scotland and Ireland. In seawater, trout are fed a diet similar to salmon, which accounts for their pink-coloured meat.

When the fish have reached commercial weight, the trout are collected with a net or are pumped on to land.

Production and trade

In 2009, the main producers worldwide were the EU, Chile, Norway, Turkey and Iran. Today, nearly all rainbow trout on the EU market come from aquaculture. Most of the EU supply of trout is locally produced. The main EU producer countries are Italy, France, Denmark, Germany and Spain. Imports come mainly from Turkey (fresh-water portion-size trout) and Norway (large marine-water trout for fillets), and the main importers are Germany and Sweden. The EU mainly exports trout to Russia and Switzerland, especially from Denmark. Trade within the EU is substantial, equal to half the total value of the EU supply. Among the Member States, Poland, Denmark and Sweden are the main exporters; Germany and Finland are the main importers.

Presentation on the market

Rainbow trout can be found on European markets all year round. For weights of up to 400 g, they are available with white or pink flesh, whole or filleted, fresh or smoked. If they are reared for longer until they reach a weight of 1.5 kg, rainbow trout are sold, like salmon, fresh (filleted or as fish steaks) or smoked (sliced). In the latter case, they are mostly cold-smoked but also hot-smoked, particularly for portion-size freshwater trout. Salted trout eggs are also consumed, especially in northern Europe.
Nutritional value per 100 g
(portion size – average)

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Value</th>
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<tbody>
<tr>
<td>Calories</td>
<td>107 Kcal</td>
</tr>
<tr>
<td>Protein</td>
<td>20 g</td>
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<tr>
<td>Selenium</td>
<td>10 µg</td>
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<tr>
<td>Vitamin D</td>
<td>7 µg</td>
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<tr>
<td>EPA</td>
<td>219 mg</td>
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<td>DHA</td>
<td>496 mg</td>
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</tbody>
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EU trout supply and trade* (2009) (MEUR)

- Production: over 30 000 tonnes
- Imports from extra EU: from 2 000 to 10 000 tonnes
- Exports to extra EU: from 2 000 to 10 000 tonnes
- Intra EU trade: less than 1 000 tonnes

Source: Eurostat.

Trout en papillote with vegetables

Ingredients (serves 4)
- 4 x 200 g trout
- 1 lemon (unwaxed)
- 4 small carrots
- ½ bunch of flat leaf parsley
- 2 red onions
- ½ glass of dry white wine
- 80 g butter
- Olive oil
- Salt and pepper

Method
1. Stuff the trout with parsley, a small quantity of chopped shallots and the grated lemon zest.
2. Chop the carrots into thin strips and steam for 3 minutes.
3. Finely chop the shallots, parsley and chives. Slice the onion into rings.
4. Peel the lemon, taking care to remove the pith, and cut into 8 segments.
5. Lightly brush the centre of 4 large sheets of greaseproof paper with oil and spread ⅔ of the ingredients over the sheets.
6. Lay the trout on the sheets. Place 3 knobs of butter on each fish and season with salt and pepper. Cover the fish with the remaining herbs and the lemon segments (2 per papillote). Pour the white wine over the fish. Carefully close the edges of the greaseproof paper to form the papillotes.
7. Bake in an oven at 200°C for 12 minutes. Turn off the oven and leave to stand for 5 minutes. Serve the fish in the papillotes.

Recipe courtesy of chef David Monier (Euro-Toques Belgium)