Farmed Shrimp

Forty-four percent of the shrimp we consume is produced by aquaculture. In recent years, production has increased approximately 10 percent annually. In 2005, shrimp aquaculture was a $10.6 billion industry that generated almost 2.6 million metric tons of shrimp.

The Production Process

It takes approximately 3 to 6 months to grow market-sized shrimp. This often means it is possible to grow two or three crops a year.

The process happens in two stages. During the larval stage, larvae are captured from the wild or spawned from broodstock and grown in hatchery tanks. After approximately one month, some producers stock the shrimp at high densities in raceways, enclosures or tanks for an additional one-month nursery stage. Other producers skip the nursery stage and transfer the post-larvae directly into grow-out basins that often are earthen ponds or enclosed sections of inlets and bays.

Average pond size can range anywhere from 0.5 ha to 20 ha or larger. Stocking density is divided into different categories, ranging from “extensive” to “super-intensive.” As illustrated below, when density increases, the technology and water management technique used becomes more sophisticated and shrimp feed is used more heavily.

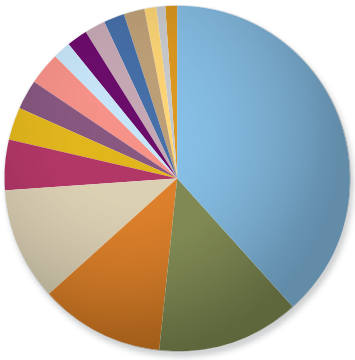
Category	Water flow technique	Feed Source	Stocking Density (Post-Larvae shrimp/m³)
Extensive	Tidal flushing	Natural feed	0-5
Semi-intensive	Pumps	Natural feed supplemented by shrimp feed (made of 12-25% wild fishmeal and fish oil)	5-20
Intensive	Aeration (improves oxygen flow)	Heavy reliance on shrimp feed	20-30

Farms in all density categories frequently use fertilizer to stimulate the growth of phytoplankton and zooplankton, on which shrimp feed. Lime is sometimes used as a disinfectant or to alter the pH of ponds. Antibiotics may also be used to manage disease outbreaks. The legality of different antibiotics varies by each producing and importing country.

Once shrimp reach marketable size, ponds are usually drained and the shrimp are collected and iced in holding containers, and brought to processing plants. They are then sorted and processed according to intended end use. If the heads are left on, the shrimp are soaked in sodium meta-bisulfate in order to reduce shell oxidization (preventing black spots). Shrimp may also be shelled, de-headed, deveined, or cooked. Any value-added processing, such as breading, is often done at other processing plants. Typical packaging varies from plastic bags or cartons to a combination of plastic and cardboard, depending on product use.

Production Statistics

- **Farmed Shrimp by Country**
  Shrimp is farmed in many regions, but Asia has the highest output. In 2005, China, Thailand, Vietnam, and Indonesia accounted for more than three-quarters of all global production.

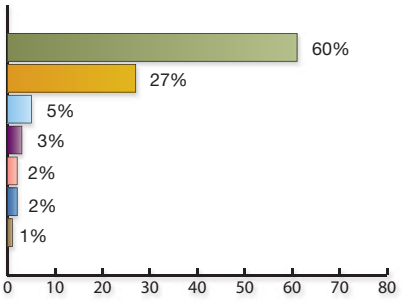


Data source: FAO FishStat 2005

China - 40% | India - 5% | Bangladesh - 2% | Malaysia - 2%
Thailand - 14% | Mexico - 4% | Ecuador - 2% | Colombia - 1%
Vietnam - 12% | Other - 4% | Myanmar - 2% | Venezuela - 1%
Indonesia - 11% | Brazil - 3 % | Philippines - 2% | Taiwan - 1%

- **Main Farmed Shrimp Importers**
  The United States, European Union and Japan are the primary importers of farmed shrimp.

- **Farmed Shrimp by Species**
  There are many different kinds of shrimp species in the wild, with the most popular being whiteleg shrimp and giant tiger prawns.



Data source: FAO FishStat 2005

Whiteleg shrimp - *Penaeus vannamei* - 60%
Giant tiger prawn - *Penaeus monodon* - 27%
Penaeus shrimps - *Penaeus* - 5%
Banana Prawn - *Penaeus merguiensis* - 3%
Fleshy Prawn - *Penaeus chinensis* - 2%
Kuruma Prawn - *Penaeus japonicus* - 2%
Other - 1%

Potential Environmental Impacts

- **Feed:** The use of fishmeal and oil in shrimp feed contributes to the global depletion of reduction fisheries.
- **Habitat conversion:** If areas established for shrimp ponds are not carefully situated, they can alter ecologically sensitive natural habitats.
- **Water pollution:** Effluents from farms and hatcheries can be enriched with nutrients, antibiotics and chemicals. If not dealt with properly, these effluents can be problematic when released into the water.
- **Antibiotics/chemicals:** The use of antibiotics and chemicals can have unintended consequences on untargeted organisms and result in antibiotic resistance.
- **Water use:** High water use can result in drained aquifers and salinization of groundwater if care is not taken to deplete freshwater aquifers.

Ways to Help Encourage Sustainable Farming

Use your purchasing power

Buy from farms that do, or are working towards doing, the following

- have detailed bio-security plans to prevent and minimize disease as well as its transmission by shrimp-consuming animals
- monitor ponds to ensure illegal inputs are not utilized and discharges are minimized
- have routine monitoring programs to ensure water quality
- use only legal antibiotics under veterinarian supervision and never prophylactically
- ensure ponds are fallowed and disinfected between production cycles
- maximize efficient water use by reduced water exchange and avoid the depletion or salinization of groundwater
- produce shrimp in ponds above high tide lines or out of mangroves and sensitive wetlands
- have reforestation or similar programs
- are managed with a traceability scheme

Join the Shrimp Aquaculture Dialogue

We encourage you to support the Shrimp Aquaculture Dialogue – a roundtable discussion to develop standards for minimizing or eliminating the key environmental and social issues associated with shrimp farming. The standards will be measurable, science-based and created by the world's leading shrimp farmers, academics, NGOs and others. Adoption of the standards will help ensure that farmed seafood is healthy for humans and the environment. We also encourage you to ask the seafood producers you work with to participate in the Dialogues.

To learn more about the Shrimp Aquaculture Dialogue and other Dialogues initiated by WWF go to: worldwildlife.org/aquadialogues

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Eric Bernard
WWF Aquaculture Program Officer
ebernard@wwf.fr
+33 (6) 98-40-53-93

worldwildlife.org