

What Can I See?

From the outside, RAS facilities look like large buildings. Depending on the size of the facility, there may be just one building or a series of buildings on the same property. Facilities are located close to a municipal or underground water source and are typically multiple acres of land.

What Would I See?

If you were to take a tour through a RAS facility, you'd see a wide size range of tanks that hold salmon throughout different stages of their lifecycle. Eggs begin in incubators, which look like stackable trays, before being moved to small tanks that are aligned into rows. As the fish continue to grow, they are moved into larger tanks that require a netted cover to prevent fish from accidentally jumping out. All of the tanks in the facility are connected to pumps that filter and recirculate the water inside. In addition to the fish-filled tanks, there are many other important pieces of equipment necessary to ensure the proper care of the salmon, such as oxygen generators, disinfection systems, and temperature regulators, though each facility will be set up differently.



Why RAS Aquaculture?

RAS technology uses specialized equipment to raise aquatic species in highly controlled, land-based buildings. RASs are designed to reduce water use, and protect fish from pathogens, predators, and escape. This method also allows for local fish production, which lowers transportation costs and carbon footprints, while collecting and composting fish waste to reduce pollution. The technology precisely controls environmental factors like temperature, water quality, and feeds to create an ideal environment for fish to grow.



E. Peter Steenstra/USFWS

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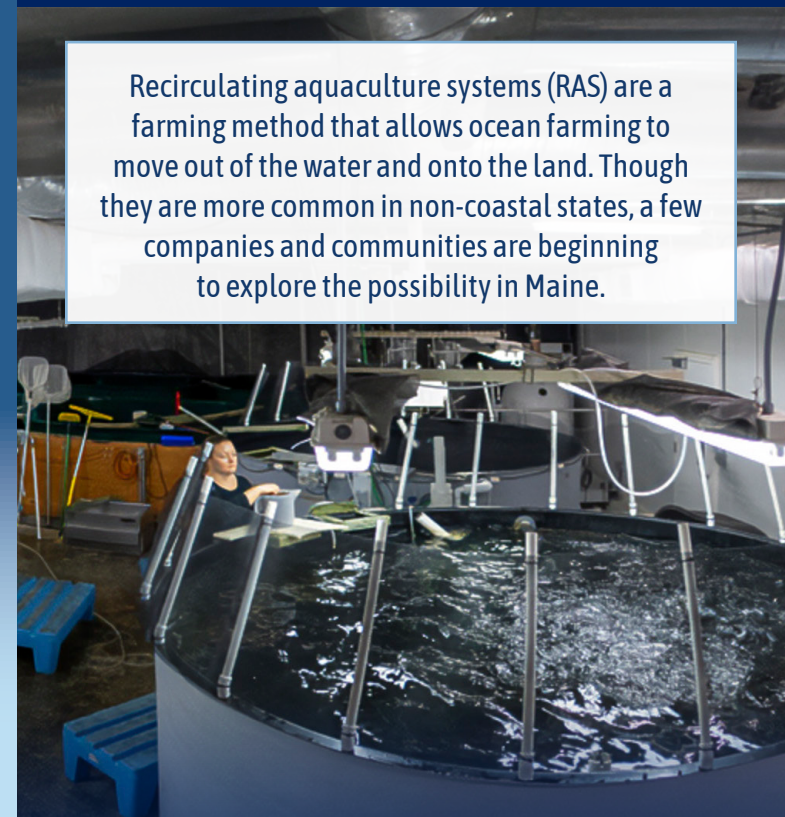
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What's in the Water?

RECIRCULATING AQUACULTURE

Recirculating aquaculture systems (RAS) are a farming method that allows ocean farming to move out of the water and onto the land. Though they are more common in non-coastal states, a few companies and communities are beginning to explore the possibility in Maine.



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The Maine Sea Grant College Program at the University of Maine, sponsored by the National Oceanic and Atmospheric Administration (NOAA) and the State of Maine, is a part of a network of 34 NOAA Sea Grant Programs throughout the coastal and Great Lakes states and territories.

Farming Process

Raising salmon using RAS technologies is a unique process that must be carefully monitored and controlled.



Hatchery

Salmon in the RAS facilities begin as fertilized eggs that spend six to eight weeks in the nursery. Once hatched, the young salmon are transferred to bigger tanks.

Grow Out

The salmon will mature into adults during their one to two years in grow-out tanks, where they'll have plenty of space to swim, school, and grow naturally. RAS technicians will regularly monitor, sample, and feed the fish during this stage.

Harvest

Graders are dropped into the tanks to separate the larger fish from the smaller ones—smaller fish are able to swim through the holes to get back to the open area of the tanks. The fish that are too large to pass through the grader will be chosen for harvest and removed to be sent to processors.



Frequently Asked Questions

Do US farm-raised salmon contain growth hormones and artificial additives?

In the US, the Food and Drug Administration (FDA) has prohibited using growth hormones in food fish aquaculture. For the very few drugs approved by the FDA for use with aquatic animals, strict withdrawal schedules are followed so that residues do not remain when fish reach the market.

Where does the waste from the tanks go?

Any uneaten fish food and all fish waste is collected, composted, and used as a soil fertilizer by local farmers, or turned into biogas or biofuels to help power the RAS facilities.

How can RAS help my community?

RAS technology can be used in places that are land-locked, providing food security, job growth, and support of local economies.

How can RAS help our environment?

Almost 90% of seafood in the United States is imported from countries like Canada, Chile, and Norway. RAS technologies will increase the domestic seafood availability and therefore minimize the carbon footprint left behind by the importation of seafood.

What are the benefits of land-based farming?

RAS are a critical advance in salmon farming because they eliminate risks like waste pollution, fish escapes, and fish pathogens.

Are any other species raised in RAS facilities?

Trout, arctic char, sturgeon, shrimp, and eels are also being raised in RAS facilities around the world.