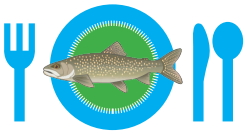
What is aquaculture?

Farming in the water

WHAT DO FARMERS GROW IN THE WATER?

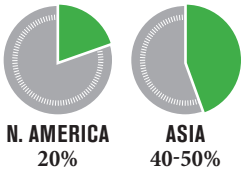
People have been farming in the water for thousands of years. Around the world, farmers grow aquatic crops such as clams and oysters, shrimp, kelp, and dozens of species of fish. In Michigan, seafood farmers raise crops such as trout, salmon, tilapia, bass, yellow perch, minnows, lake whitefish, shrimp, and more.

WHY FARM FISH AND OTHER AQUATIC CREATURES?



FOOD

Seafood can be a healthy source of protein, vitamins, and minerals.

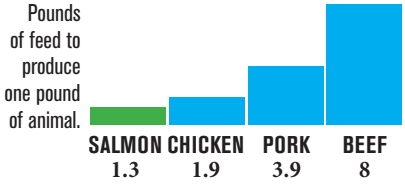


DEMAND[1]

In the next 20 years, global demand for seafood is expected to rise (see graphic).

SUSTAINABILITY[2]

Farming seafood can take pressure off dwindling wild populations.



EFFICIENCY[3]

Fish and other underwater crops need less space, food, and energy than traditional livestock animals.

Fish can also be farmed as bait, raised as pets, stocked (released to boost wild populations), or grown in classrooms.

HOW DO FARMERS GROW THESE CROPS?

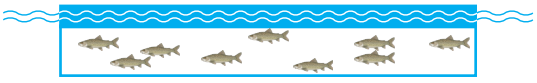
Globally, farmers raise aquatic crops in lakes, streams, or oceans. Others move their operations into ponds, tanks, or pools, some of which can be located indoors. Aquaculture farms usually fit into one of these categories:

EVERY AQUACULTURE FARM NEEDS

Food coming in

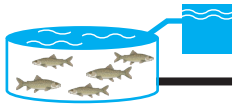
Waste going out

Oxygen in water



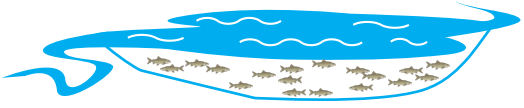
RACEWAYS

Rectangular channels with a steady flow of water from springs, wells, or nearby streams.



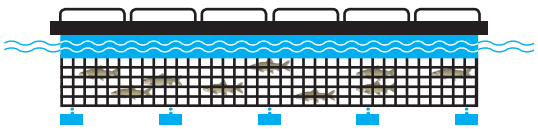
RECIRCULATING

Tanks or pools, often indoors, with a water supply that's filtered, reused, and also replaced.



PONDS

Pools that may be drained or divided so farmers can easily harvest their crops.



NET PENS[4]

Outdoor cages placed in bodies of water where fish are raised.

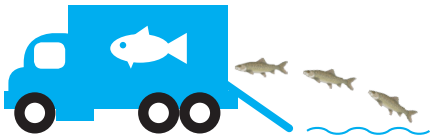
WHY FARM FISH IN MICHIGAN?

About 90 percent of seafood sold in the U.S. is imported from other countries. Even in Michigan, where we have a wealth of fresh water, we import about 95 percent of our seafood! What if we farmed some of the fish here instead?

Farmed fish can complement products from commercial fisheries.

More money stays with local Michigan producers, markets, and communities.

Seafood products must meet strict regulations for safety, farm design, and labeling.

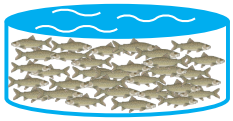


Shorter supply chains deliver fresher fish to markets and kitchens.

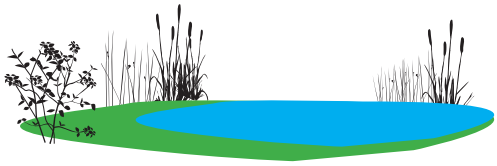
Farms stock fish species approved by Michigan regulators. Local zoning determines farm locations.

Consumers know exactly where their products are coming from — and might even be able to visit the farm in person!

WHAT ARE SOME POTENTIAL DRAWBACKS TO FARMING FISH IN MICHIGAN?

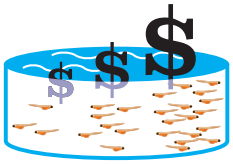


Overcrowded tanks and ponds can put some farmed fish at higher risk of injury and disease.



Farms that don't meet state regulations could put too many nutrients back into the environment, causing problems like algal blooms.

While diseases can move between wild and farmed fish, most farms stock certified disease-free fish.



Farms can be very expensive to start and may take a long time to become profitable.

michiganseagrant.org/aquaculture | fisheries.noaa.gov/aquaculture

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Michigan Sea Grant helps to foster economic growth and protect Michigan's coastal, Great Lakes resources through education, research, and outreach. A collaborative effort of the University of Michigan and Michigan State University, Michigan Sea Grant is part of the NOAA-National Sea Grant network of 33 university-based programs.

[1] OECD/FAO (2013), OECD-FAO Agricultural Outlook 2013, OECD Publishing, Paris, doi.org/10.1787/agr_outlook-2013-en.

[2] NOAA National Marine Fisheries Service definitions (Revised edition 2006): st.nmfs.noaa.gov/st4/documents/FishGlossary.pdf; Best Aquaculture Practices certification for aquaculture sustainability.

[3] Fry, Julian P. et al., (2018) 2018 Environmental Research Letters Vol. 13, No. 2. iopscience.iop.org/article/10.1088/1748-9326/aaa273/meta (Table 2);

[4] Commercial net-pen aquaculture is not currently permitted in the Great Lakes in Michigan.

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