

# **Barley protein concentrate could replace fishmeal in aquaculture feeds**

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Agricultural Research Service (ARS) scientists and Montana Microbial Products (MMP) of Butte, Mont., have developed a barley protein concentrate that could be fed to trout and other commercially produced fish.

Physiologist Rick Barrows at the ARS Small Grains and Potato Germplasm Research Unit in Aberdeen, Idaho, teamed with MMP to apply for a patent on a new enzymatic method that concentrates barley protein and produces raw material for another valuable commodity--ethanol. This process provides a high-protein ingredient that may replace other, more expensive protein sources like fishmeal and soy protein concentrate in commercial fish feed.

Currently there is no commercial production of barley protein concentrate, but MMP is producing small quantities for fish-feeding studies with trout, salmon and other species. MMP projects that the concentrate will sell for \$700 to \$1,200 per ton. Since fishmeal costs about \$1,200 per ton, the projected costs of barley protein concentrate compare favorably.

Feeding trials conducted by the Aberdeen researchers and MMP show that barley protein concentrate successfully replaced both fishmeal and soy protein concentrates in fish feed, meeting the fishes' protein requirements. Barrows and other researchers in the ARS unit also are examining the genetics of barley to modify the grain for improved protein yield and nutritional composition.

According to Barrows, feed is part of a complex interplay of genetics, nutrition and economics in fish production. Barley protein concentrate could completely replace fishmeal in fish feed if other essential nutrients are provided as supplements.

Using barley protein instead of fishmeal in commercial fish feed could help reduce the demand for millions of tons of [fish](#) taken from the ocean each year to produce fishmeal.

**More information:** Read more about this research in the February 2010 issue of Agricultural Research magazine, available online at: [www.ars.usda.gov/is/AR/archive/feb10/fish0210.htm](http://www.ars.usda.gov/is/AR/archive/feb10/fish0210.htm)

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