Impact of selective breeding on European aquaculture

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Impact of selective breeding on European aquaculture

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Abstract

Objectives of this study were to determine the combined market share of breeding companies in aquaculture production in Europe, to describe the main characteristics of breeding companies and their programs, and to provide per species estimates on cumulative genetic gain in growth performance. Surveys were conducted among breeding companies of five major species cultured in Europe: Atlantic salmon, rainbow trout, European seabass, gilthead seabream, and turbot. The market share was estimated as the combined egg or juvenile production of breeding companies relative to the total egg or juvenile production in Europe for each species in 2012. Cumulative genetic gain was estimated from the number of selected generations in current breeding programs, combined with genetic trends, reported selection responses in literature, and phenotypic differences. The combined market share of breeding companies ranged from 43-56 % for seabass to 100 % for turbot. The total volume of fish production in Europe that originated from selective breeding was 1653-1706 thousand tonnes, corresponding to 80-83 % of the total aquaculture production. Over species, there were 37 breeding programs of which the majority performed family selection. Growth performance was universally selected upon.

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