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Title:	Aquaculture Productivity Enhancement Through Advanced Technologies
Authors:	Ramachandran, Rajesh (/jspui/browse?type=author&value=Ramachandran%2C+Rajesh)
Keywords:	Aquaculture Productivity Productivity Enhancement Through Advanced Technologies
Issue Date:	2022
Publisher:	Springer Nature
Citation:	Advances in Fisheries Biotechnology, 1-28.
Abstract:	<p>To cope with the growing demand of protein requirement for the world population, aquaculture should be given more attention as the growth of capture fisheries from both sea and freshwater has stagnated in the last few decades. Looking at the data collected by the FAO, it is now clear that aquaculture productivity has surpassed the capture fisheries substantially. Such development has been possible due to factors such as advancement in stock improvement, better health care, optimal food and feed development and better water quality management for species used in commercial aquaculture. Though advancement in all these areas has collectively enhanced the productivity, the increased population pressure has forced the aquaculturists to look for methods to enhance productivity further. Several technologies are now available which may be used to fulfil the requirements of increasing productivity. Transgenic (both auto-transgenic and allo-transgenic) technology has been available for several fish species from the early 1980s, where it has shown that higher growth rate, better health care and tolerance to environmental stress can be modulated for ensuring higher productivity. Problem in implementation of these technologies was the regulatory stumbling block which took more than 20 years to resolve (the first approval was received in 2019). The use of gene editing techniques, especially CRISPR, though developed recently, is increasing at a very rapid pace in many areas of aquaculture that may enhance productivity. The regulatory authorities have taken a proactive decision (at least in one case concerning a Tilapia species altered for higher growth rate) where alteration/deletion of a few bases is not considered as a new genetically modified organism and therefore, could be cultivated at commercial scale without regulatory approvals. Micro RNA technology is also developing at a very fast pace as an advance technique of DNA sequencing and computation in fish species to test and assign the role of new miRNAs. In this chapter, all the aforementioned techniques are described briefly with a few relevant examples of their usage with respect to productivity enhancement of aquaculture species.</p>
Description:	Only IISERM authors are available in the record.
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