

EXPLORING THE POTENTIAL AND CONSTRAINTS OF SMALL HOLDER AQUACULTURE IN MARGINALIZED SALINE AREAS IN PAKISTAN

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Aquaculture is still a relatively young activity in Pakistan, but there is immense potential for the sector to develop. Aquaculture has been identified as an alternative livelihood source for many rural farming households living in areas with brackish groundwater. Due to the arid and semi-arid climate of Pakistan, which results in scarce and irregular rainfall, several rural areas are affected by salinity and waterlogging. It is estimated that more than 6 million hectares of Pakistani soil are affected by salinity. Salinity in the soil has caused many lands to be unsuitable for growing crops, and thousands of hectares have been abandoned. As an alternative livelihood, aquaculture can be adopted on such saline lands that are not suitable for crop cultivation. However, there is still limited research and understanding of the constraints and development opportunities for small-holder saline aquaculture farmers in marginalized saline areas of Pakistan. This paper is based on a survey conducted by WorldFish and IWMI on Saline and Marine Aquaculture in Pakistan, which aims to develop a shared understanding of the potential of saline and marine aquaculture for smallholders in marginalized saline areas in Pakistan. The study focused on the Southern Punjab and Sindh Provinces due to the high levels of saline groundwater in these provinces as well as the large proportion of aquaculture farmers in these provinces.

Preliminary results show that saline aquaculture in the study area is exclusively (100%) dominated by men. This is in variance with the gender share in agriculture, where around 67.2 % of farmers are women. The pond water in the study area is highly saline having a pond average of 7.6 ms/cm conductivity. Just around a third of the farmers have nursery themselves, and almost none have a fish hatchery for breeding. Special pond management practices like species selection, liming, maintaining stocking density, and using quality fish seeds are rarely practiced, as only a third of the farmers said that they implemented some special management practices in their ponds. Around 21 % of the respondents did not apply any form of fertilization either before or after stocking the fish. Due to its high survival rate, Rohu is the most important species stocked by the farmers in the study area (84%). This is followed by Catla at 71%, Mirgel at 63%, common carp at 55%, and grass carp at 53%. Just around 12 % of the respondents stocked Singhari (catfish) and tilapia respectively, and less than 2% stocked moli seed and other local seeds. Around 88 % of the farmers are satisfied with growth parameters. In general, most of the ponds (96%) are attacked by animals including otters, rodents, etc. Almost all farmers have witnessed waterlogging or saline near their ponds. While only 28 % of farmers worry about disease outbreaks, they are more likely to worry about marketing issues. Gross income from aquaculture is low in the presence of high feed and input costs,

There are opportunities for aquaculture development as the younger generation is interested in the business. Opportunities for women to participate in aquaculture are not clear as 59 % of farmers said that it is better for women not to work in aquaculture, 31% disagree and 10% are neutral. In fact, close to 80% of the respondents said that women do not have access to aquaculture farming equally as men. Going forward, the improvement of saline aquaculture in the study area, among others will require investments and policies that will improve water availability, enhance the use of advanced techniques for measuring water quality, skill development, provision of quality seed, fertilizer, and feed at a cheaper price, and provision of a stable market rate of fish to improve earning.