

A greater emphasis on more flood-tolerant Aman rice would also allow for earlier, more frequent opening of sluice gates for longer periods during the rising flood. Such adaptive strategies are likely to become increasingly necessary in Bangladesh and other parts of South Asia where precipitation is predicted to increase during the flood season, but decrease during the dry season in response to climate change.

#### For further information....

These 'key messages' are mainly based on the guidelines developed by FMSP project R8210, as available on the project page of the FMSP web site ([www.fmsp.org.uk](http://www.fmsp.org.uk)). Other references available for download are given below.

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# Improving fish catches inside flood control schemes

## Background

Flood control, drainage and irrigation (FCDI) schemes exist widely in Bangladesh. FCDI schemes are built to benefit farmers and to protect communities against extreme flooding. Whilst the benefits to farmers can be significant, the fisher community suffer lower fish catches and diversity. Reduced access to migratory *whitefish* species are largely responsible for these losses.



Six recommendations are presented below to help improve the catches and diversity of fish inside FCDI schemes. These recommendations neither require the construction of costly fish passes nor any structural changes to existing sluice gates. Instead they can be easily implemented with the help of local stakeholders and aim to have minimum impact on farmer's wellbeing.

## The six recommendations:

- (1) Managers should aim to operate sluice gates to maximise the flow of water (and therefore fish) into the flood control scheme during the rising flood period.**

Very large numbers of juvenile and spawning adult fish can enter FCDI schemes via sluice gates with inflowing water. Maximising the inflow of water during the rising flood period will help to ensure that more fish can enter FCDI schemes. This will improve both catches and biodiversity.

- (2) Sluice gate managers should aim to open sluice gates as frequently as possible and attempt to minimise the turbulence of water outside sluice gates during the rising flood period.**

Biodiversity and fish production benefit from more frequent gate openings, particularly during the rising flood period. In some cases, turbulence in front of sluice gates can act as an obstacle to the induction and smooth passage of fish through the gate.

- (3) Sluice gate managers could control ebb flows from sluice gates to attract more fish into FCDI Schemes and to maximize passage success.**

Large numbers of juvenile and spawning fish can successfully migrate through sluice gates with inflowing water during the flood period. Sluice gate managers can also help improve the chances of successful passage of larger but less numerous fish through sluice gates during the ebb flood. This can be achieved by ensuring that ebb flow velocities do not exceed the maximum sustainable swimming capacities of inwardly migrating fish and/or by creating ebb flows that attract the most fish towards the sluice gate.

- (4) Sluice gate managers should consider closing sluice gates during the ebb flood to retain more water within FCDI schemes during the dry season.**



*Management of dry season water resources is important for both farmers and fishers*

Studies have shown that raising average dry season water levels by as little as 25cm can bring significant benefits to fisheries operating inside FCDIs by improving the survival of fish during the dry season, and spawning success during the start of the rainy season.

- (5) Managers should control fishing activities along channels connecting the sluice gates to the main rivers.**

More than 50% of migrating fish can be caught before they even reach the entrance of sluice gates. Controlling fishing activities along channels connecting gates to main rivers is therefore very important, particularly in circumstances where gates remain permanently open.



*Fishing activities on canals linking sluice gates to the main river channel should be controlled*

- (6) Managers should seek to encourage alternative cropping strategies and the retirement of marginal low-lying agricultural land that is prone to early flood risk.**

Switching to alternative dry season crops such as wheat or onions (and other cash crop) that require less irrigation (less frequent and smaller applications of water) could help reduce pressure on dry season water resources that provide critical habitat for resident (non-migratory) fish.



*A greater emphasis on deepwater Aman could benefit both farmers and fishers*