Online fish health and water quality monitoring tool

WorldFish

The online fish health and water quality monitoring tool is an automated system that allows users to record key indicators of fish health which include daily fish mortalities and clinical signs of disease, as well as observations of water quality parameters that directly affect the monitored stock. The tool compiles the data automatically into an online Excel spreadsheet that can be used to refer to previous records. This online tool was developed for WorldFish breeding platforms for daily husbandry and to flag unusual mortality events. It also enables users to send automated email notifications with details of mortality reports to specific individuals if any unusual mortalities are observed. Though initially developed for daily health monitoring, the online tool can also be used to report unusual mortality events, annual health assessments and stock pre-exit health assessments before transferring fish to other facilities.

Users of this online tool will be able to access and use the following two main components:

QR code:

1. An online data entry form to enter daily entries of mortalities, stock counts, observations of clinical signs of disease and water quality measurements. Note: This form replaces the traditional paper form for users to key in and efficiently compile information from multiple production holding units. **URL link**: https://bit.ly/3D0heUR

2. An online record for users to access all past entries made on fish mortalities, stock counts, observations of clinical signs of disease and water quality measurements. Note: All submitted form entries are automatically recorded into an online Excel record that can be used as reference for previous entries and for early detection of increased mortalities, clinical signs of disease and changes in water quality parameters. **URL link**: https://bit.ly/3okKzVX

Additional features of the online fish health and water quality monitoring tool include the following:

- Option to send an automated email notification with the form entry details to any pre-specified email address(es) if the user reports the mortality as unusual.

- Option to automatically calculate the mortality rate of the online records if the user enters the stock count (current default stock count is set at 100 animals per holding unit).

- Option to automatically display alerts to flag unusually high mortalities within online records using a pre-calculated formula and to display symbols when the mortality value goes beyond any pre-set limit in a single holding unit. For example, holding units with 10 percent or more mortalities from the latest stock count entry will be indicated by two exclamation ("!!") marks in the following column within the online record.

Daily records generated by trained staff working in hatchery, nursery or farm facilities can be shared with any diagnostic lab at the time of submitting biological samples for disease diagnosis. Having detailed information with the case history is extremely valuable in arriving at a presumptive diagnosis and to implement specific management measures while waiting for a confirmatory diagnosis from the labs. In addition, this will encourage the farm/facility operators to comply with better practices and biosecurity guidelines.

The WorldFish online fish health and water quality monitoring tool can be adapted to users' needs, such as adjustments in the number of holding units and the type of water quality parameters being monitored or addition of other parameters. It uses Microsoft applications comprising Microsoft Forms, Microsoft Excel, Power Automate and Microsoft Outlook, so the tool can be shared with all CGIAR staff who have pre-existing access to a Microsoft Office 365 account.

The tool is currently being used in its contextualized versions for routine daily monitoring by the genetic improvement program teams at WorldFish headquarters in Penang, Malaysia, and for pilot studies by the Carp Genetic Improvement Program team in Bangladesh. WorldFish aims to distribute the tool for monitoring purposes in other breeding platforms in Egypt, Zambia, Malawi, Ghana and Kenya.

Acknowledgments

Plate 1. A woman writing data on her data entry book in Jessore, Bangladesh.