Volume 1
(Issue 02) 2022
April - June

FR&TI NEWSLETTER

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Fisheries Research & Training Institute, Manawan
Lahore, Pakistan

R&T NEWSFEED

PNAC Approved Extension in Scope of Sample Matrices for QCL

Pakistan National Accreditation Council (PNAC) has approved extension in the scope of sample matrices for Quality Control Labs (QCL). QCL has now been authorized to provide testing services in water, feed, fish and other food items. QCL was accredited for the first time in November 2017 according to the requirements of ISO/IEC 17025: 2005 by PNAC for twelve (12) chemical and microbial parameters of water, feed and fish. PNAC has now approved the addition of "food items" in scope of testing materials of QCL. Number of chemical and microbial parameters included in scope of QCL is also continuously increasing since 2017. At present, eighteen (18) chemical and microbial parameters of water, feed, fish/food have now been accredited by Pakistan National Accreditation Council (PNAC) based on the requirements of ISO 17025: 2017.

QCL Passed Proficiency Testing for Four Microbial Parameters of Meat and Fish

Quality control labs has qualified the proficiency testing for four (04) microbial parameters (total aerobic mesophilic count, enumeration of Coliform, enumeration of *Escherichia coli* and enumeration of Enterobacteriaceae) of meat & fish in April, 2022. Proficiency testing scheme for microbial parameters of meat & fish was offered by LGC, UK. Mr. Asif Ali, Quality Manager (QCL), has said that QCL is committed to provide reliable testing services to its customers and qualification of proficiency testing provides independent feedback on laboratory's performance.

QCL Recognized as "Food Laboratory" by Punjab Food Authority for Analysis of Meat Samples

Punjab Food Authority (PFA) has recognized Quality Control Labs (QCL) as "Food Laboratory" for analysis of poultry, meat, beef and fish samples. Earlier, QCL was providing its services to Punjab Food Authority for analysis of fish samples. QCL has received one hundred and seventy one (171) samples of poultry and beef from PFA in April 2022 for analysis of their chemical and microbial quality. Mr. Asif Ali, Quality Manager (QCL) told that it is for the first time that QCL is going to provide microbial and chemical testing services in matrices other than fish. Multiple shifts have been scheduled for technical staff at QCL for analysis of meat samples received from PFA. Dr. Anser Mahmood Chatta, CEO (QCL), has expressed hope that QCL will generate a revenue of about Rupees 1.6 Million through this contract. He further added that QCL is devoted to provide reliable and efficient testing services to its customers but there is need to utilize its full potential through making it a profitable organization.

Inauguration Ceremony of One Week Refresher Training Course for Superintendents, Statistical Officers and Office Assistants

Inauguration ceremony of one-week Refresher training course for superintendents, statistical assistants & office assistants on Financial & Office Management was held on April 18, 2022. The Ceremony was chaired by Dr. Anser Mahmood Chatta, Director Fisheries (R&T). Dr. Anser, during his Inaugural Address, remarked that the refresher training course is arranged for the first time for superintendents, office assistants and statisticians because they play an important role in their workspace. This refresher course will help them to excel in a broader range of roles with increased efficiency. He further added that FR&TI is striving to foster a culture of continuous learning throughout the country in the filed of Fisheries and Aquaculture. Mr. Bilal Ahmed, Deputy Director Fisheries (Principal) welcomed the trainees and expressed hope that they will utilize this training opportunity to improve their knowledge and skills in their relevant fields.

Inauguration Ceremony of Five Months Pre-Promotion Training Course for Fisheries Research Assistant/ Assistant Warden Fisheries

Inauguration ceremony of five months Pre-Promotion training course for Fisheries Research Assistants/ Assistant Warden Fisheries was held on May 9, 2022 under the chairmanship of Dr. Anser Mahmood Chatta, Director Fisheries (R&T). A total of twenty-four (24) Fisheries Research Assistants/ Assistant Warden Fisheries were nominated for the training course including four (04) trainees from Gilgit Baltistan. Mr. Bilal Ahmed, Deputy Director Fisheries (Principal), during his welcome address, elaborated the rules and regulations that must be followed by the trainees to maintain discipline and decorum during the entire training period. Dr. Anser Mahmood Chatta, Director Fisheries (R&T), during his inaugural address, commented that Pre-Promotion training courses are a step towards a new trek in professional life of course participants. He emphasized that trainees must not only try to qualify the training course but also to bring positivity in their thinking and behavior for a creative working environment at their workplaces. He especially welcomed the trainees from Gilgit Baltistan and said that FR&TI will try its best to facilitate them during the training course.

Certification Distribution Ceremony of One Week Refresher Training Course for Superintendents, Statistical Officers and Office Assistants

A Certificate Distribution Ceremony was held at the end of one-week refresher training course for superintendents, statistical assistants & office assistants on April 22, 2022 under the chairmanship of Dr. Anser Mahmood Chatta, Director Fisheries (R&T). Dr. Anser congratulated the trainees on successful completion of training course and advised them to implement the knowledge and skills gained through training course at their workspace to become a valuable asset of the Department. Later, he distributed training certificates among the course participants.

FR&TI Participated in a Workshop on "Draft National Residue Control Plan"

Fisheries Research & Training Institute (FR&TI) participated in a workshop on "Draft National Residue Control Plan" on June 13, 2022 in Lahore. The workshop was organized by Fisheries Development Board (FDB) under the "Pilot Shrimp Farming Cluster Development Project" for mutual discussion and subsequent improvement in the "Draft National Residue Control Plan (NRCP)". The NRCP is prepared by FDB to target European Union and other International markets for export of Aquaculture products. Dr. Sikender Hayat, Director General Fisheries, Punjab, Dr. Anser Mahmood Chatta, Director Fisheries (R&T), Mr. Muhammad Iftikhar, Director Fisheries (Admn), Dr. Muhammad Abid, Director Fisheries (Aqua), Mr. Muhammad Ramzan, Director Fisheries (P&D) and senior officers of FR&TI and Directorate of Hatchery Management participated in the workshop. Mr. Muhammad Junaid Wattoo, CEO, Fisheries Development Board (FDB), explained that development and implementation of NRCP is essential to introduce our seafood into global markets. Dr. Sikender Hayat, Director General Fisheries, Punjab, remarked that shrimp is expected to become the largest farmed commodity in future. He appreciated the efforts undertaken by FDB in preparation of Draft NRCP for shrimp export in international markets and ensured that the Department of Fisheries, Punjab, will provide full support for its development and implementation. Dr. Anser Mahmood Chatta, Director Fisheries (R&T), emphasized that shrimp is the high valued export commodity and development of NRCP is crucial to target global markets for its export. He further informed that Quality Control Labs (QCL) at FR&TI is ranked among the top few labs that fulfill the criteria to become a NRCP testing lab. During the discussion section, Dr. Anser emphasized that changes in relevant food laws are also inevitable for successful implementation of NRCP.

Inaugural session


Dr. Anser Mahmood Chatta, Director Fisheries (R&T) discussing the challenges for NRCP Implementation

FR&TI Staff Participated in a Workshop on "National Strategy for Aquatic Animal Health"

Fisheries Research & Training Institute (FR&TI) participated in a workshop on "National Strategy for Aquatic Animal Health" in Lahore on June 14, 2022. Workshop was organized by Fisheries Development Board (FDB) under Prime Minister's Agriculture Emergency Programme. Dr. Anser Mahmood Chatta, Director Fisheries (R&T), Mr. Muhammad Iftikhar, Director Fisheries (Admn), Dr. Muhammad Abid, Director Fisheries (Aqua) and senior officers of FR&TI and Directorate of Hatchery Management were present in the workshop. Mr. Muhammad Junaid Wattoo, CEO, Fisheries Development Board (FDB), presented an overview of National Strategy for Aquatic Animal Health (NSAAH) for Pakistan and highlighted the need for managing good biosecurity in aquatic ecosystems. Dr. Anser Mahmood Chatta, Director Fisheries (R&T), delivered a comprehensive lecture on "Status of Fish Diseases in Pakistan" in which he described the main fish diseases prevalent in the country and proposed measures to control them. He discussed the present status of fish disease management in Pakistan and provided recommendations for improvement. Dr. Anser also emphasized the need for development of an extensive biosecurity plan for country's aquatic ecosystems. Mr. Muhammad Iftikhar, Director Fisheries (Admn), said during the discussion section that there should be special quarantine system for exotic fish species. He further added that baseline data on fish disease prevalence in the country should be collected and used for development of a disease surveillance system. Participants of an ongoing Pe-Promotion training course at FR&TI for Fisheries Research Assistants/ Assistant Warden Fisheries were also invited to attend the workshop and enhance their learning on fish diseases and their control.

Dr. Anser Mahmood Chatta, Director Fisheries (R&T) delivering lecture on "Status of Fish Diseases in Pakistan"

Dr. Anser Mahmood Chatta, Director Fisheries (R&T) and Mr. Bilal Ahmed, Deputy Director Fisheries (Principal) during discussion session

Workshop participants

Publication of Quarterly Newsletter of FR&TI

Fisheries Research and Training Institute (FR&TI) has published its first online quarterly newsletter for January-March, 2022 (punjabfisheries.gov.pk/doc/FR&TI_Newsletter_Volume_1_2022.pdf). The *FR&TI Newsletter* aims to disseminate information on the major events, training services, testing facilities and research & development activities of the Institute. A special section of the newsletter designated as "Farmer's Corners" is devoted to educate the valuable fish farmers about the traditional and advanced farming practices and communicate the Fisheries & Aquaculture based research findings with them. The articles in "Farmer's Corner" are published in National and International languages to increase the public's comprehension. The initiative to publish quarterly newsletter of FR&TI was taken by Dr. Anser Mahmood Chatta, Director Fisheries (R&T). Dr. Anser has emphasized that regular publication of FR&TI newsletter will help to bridge the communication gap between the Institute and other stakeholders including academia, private Aquaculture sector and public sector organizations.

QCL Identified as "a Primary Lab Suitable to Undertake NRCP for Aquaculture Products" by National Consultants of FDB

Quality Control Labs (QCL) has been identified as one of the primary laboratories in the country which have the capability to undertake the National Residue Control Plan (NRCP) for aquaculture products according to the requirements of European Union. The initiative to develop a National Residue Control Plan (NRCP) is taken by Fisheries Development Board (FDB) with the consent of Government of Pakistan to devise a programme for National Residue Control and Monitoring System for export oriented Aquaculture products. In this regard, a team of national consultants conducted a nationwide survey to identify potential laboratories with sustainable capacity to test residues in seafood according to International Standards. During the survey, Quality Control Labs (QCL) at FR&TI, Lahore, is identified as most suitable national model for chemical and microbial testing of seafood and its products. According to the survey report, QCL accredited under ISO/ IEC 17025:2017 for multiple chemical and microbial parameters is equipped with state-of-the-art equipment to analyze quality and safety of seafood. The report also suggests that scope of analysis of QCL can be enhanced to upgrade it to the level of the National Testing Laboratory.

Seminar on Control and Prevention of Dengue Fever Held at FR&TI

A seminar to create awareness on dengue control and prevention was organized on June 25, 2022 at FR&TI under collaboration of Health Department, Punjab and Civil Administration. Mr. Zeeshan Nadeem, Assistant Commissioner, Shalimar Town, during his address to seminar participants, said that it is the responsibility of every citizen to adopt all precautionary measures for control and prevalence of this dangerous disease. Mr. Imtiaz Farid, Entomologist from Health Department, Punjab, delivered a comprehensive presentation covering the causes, symptoms and prevention of dengue fever.

Mr. Zeeshan Nadeem, Assistant Commissioner, Shalimar Town, highlighting the need for dengue fever awareness campaigns

Mr. Imtiaz Baig, Entomologist, Punjab Health Department, delivering lecture on control and prevention of dengue fever

Researchers from Nutrition Section Participated in Experiments on *Pangasius* Breeding at Fish Seed Hatchery, Balloki

Mr. Yasir Ali, Assistant Director Fisheries (Nutrition) participated in experiments on induced breeding of *Pangasius* at Fish Seed Hatchery, Balloki. Mr. Yasir Ali commented that induced breeding of catfish is a highly technical process and be a part of these experiments will help to improve his skills and knowledge about broodstock selection, induced spawning and subsequent feeding of catfish larvae.

OUR SERVICES

Training & Capacity Building

Training Courses

- One Week Refresher Training Course for Assistant Director Fisheries (April 04 - April 08, 2022)

- One Week Refresher Training Course for Superintendents, Statistical Assistants & Office Assistants (April 18 - April 22, 2022)

- Five Months Pre-Promotion Training Course for Fisheries Research Assistant/ Assistant Warden Fisheries (May - September, 2022)

Internship Opportunities

FR&TI offers Internship Programmes for graduate and post graduate students of different universities and other educational institutes of the Punjab. Internship Programmes provide the opportunity to the students to gain direct practical experience in the field of Fisheries & Aquaculture. At present, nine (09) students from the University of Veterinary and Animal Sciences (UVAS), Lahore are doing their ten week internship at FR&TI.

Students from UVAS, Lahore, working in various sections at FR&TI

Exposure Visits by Academia

FR&TI is playing a catalytic role in bridging the gap between academia and public sector institutes. FR&TI provides opportunities for academia to visit the Institute and familiarize their students with the working environment outside of classrooms. These study tours and exposure visits are a great way to promote sharing of knowledge and capacity development.

Study Tour of Students from University of Okara

A group of Sixty Seven (67) students and faculty members from Department of Fisheries and Aquaculture, University of Okara, visited FR&TI on April 2, 2022. Mr. Yasir Ali, Assistant Director Fisheries (Training), welcomed the guests and briefed the students about research and training activities of FR&TI. Later, students visited different laboratories and research facilities at FR&TI. Dr. Muhammad Tanveer, Assistant Professor, University of Okara said that study tours of this kind provide exposure to the students about working environment outside the classroom.

Study Tour of Students from Superior College, Kasur

A study tour of graduate students was arranged on June 24, 2022 under collaboration of Fisheries Research & Training Institute, Lahore and Superior College, Kasur. A group of twenty five (25) students and faculty members led by Mr. Muhammad Shafiq, Head of Department of Zoology, Superior College, Kasur visited FR&TI, Lahore on June 24, 2022. Mr. Bilal Ahmed, Deputy Director Fisheries (Principal) welcomed the students at FR&TI. Dr. Kashifa Naghma Waheed, Principal Chemist/ Research Coordinator briefed the students about services and research activities of FR&TI. The students visited different installations and laboratories at FR&TI where resource persons guided them about the ongoing activities of the Institute. Mr. Muhammad Shafiq thanked the Department of Fisheries, Punjab and FR&TI for facilitating their students to enhance their learning in an interactive environment.

Study Tour of Students from Minhaj University, Lahore

A group of eighty two (82) students and faculty members from Minhaj University, Lahore, visited FR&TI on June 27, 2022. Dr. Tariq Mahmood, Deputy Director Fisheries (Admn) and Mr. Yasir Ali, Assistant Director Fisheries (Training) welcomed the students at the Institute. Dr. Kashifa Naghma Waheed, Principal Chemist/ Research Coordinator briefed the students about Institute's research activities and training services. Later, the students visited different laboratories at FR&TI and QCL where they were briefed about the Institute's research activities and services.

Testing and Diagnostic Services

Soil & Water Analysis

Water & Soil Testing Laboratory at FR&TI provides water and soil testing services to the valued fish farmers for site suitability assessment and fish farm management. Eighty four (84) water samples received from potential sites and fish ponds in Punjab have been analyzed in the Lab from April- June, 2022, through one thousand and ninety two (1092) chemical tests. Ten (10) soil samples received in the Lab during this period were also analyzed through sixty (60) mechanical and chemical tests to determine soil suitability for construction of fish ponds in Punjab.

Fish Disease Diagnosis

Dedicated staff at Aquaculture & Pathology Section of FR&TI diligently provides fish disease diagnosis services free of cost to facilitate the farmers. Twelve (12) diseased fish samples brought to the Aquaculture & Pathology Section were analyzed during April - June, 2022. Recommendations for appropriate treatment were also provided to the concerned farmers on the basis of diagnosis of fish disease.

Testing Services at Quality Control Labs

QCL is devoted to provide reliable chemical and microbial testing services for its values customers in confirmation with the requirements of ISO/IEC 17025: 2017. QCL has analyzed ten (10) samples of water, fifteen (15) samples of fish and thirty three (33) samples of fish feed through one hundred and forty five (145) chemical tests during April - June, 2022. Seven hundred and ninety nine (799) microbial tests were also conducted for twenty nine (29) samples of water and one hundred and seventy four (174) samples of fish.

RESEARCH & DEVELOPMENT

Research Activities

Annual Research Plan 2022

Eight research projects have been approved for Annual Research Plan (ARP) 2022 by the Technical Research Review Committee of the Department. Implementation of all the approved research projects has been initiated under the kind supervision of Dr. Anser Mahmood Chatta, Director Fisheries (R&T) and respective sectional heads. A brief description of activities being executed for implementation of each project is presented below.

Evaluation of Growth Performance of Tilapia (GIFT) and *Pangasius* Fish Seed with Varied Stocking Densities using Biofloc Technoloy

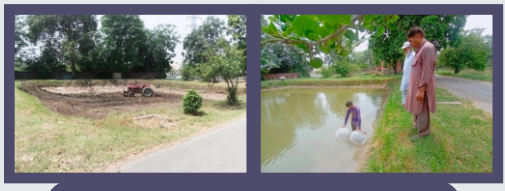
This project is conducted under the supervision of Mr. Zulfiqar Ahmed, Deputy Director Fisheries, Aquaculture & Pathology) and Dr. Kashifa Naghma Waheed, Principal Chemist (Chemistry). Biofloc tanks installed at FR&TI are supplied with air blower and aero tubes for efficient aeration of water. Fermented Carbon Organic (FCO) has been added in tanks as biofloc inocculum and molasses are added regularly to maintain the carbon source. GIFT seeds have been stocked in Biofloc tanks and their growth is regularly monitored. Water quality parameters of water in biofloc tanks are kept within suitable range.

Preparation of fully functional biofloc tanks

Monitoring of growth of GIFT seed in biofloc tanks

Studies on Effect of Probiotics on Water, Plankton Profile and Fish Growth in Pond Aquaculture

This project is conducted by researchers at Aquaculture & Pathology Section under the supervision of Mr. Zulfiqar Ahmed, Deputy Director Fisheries. Six earthen ponds at FR&TI are selected for the experiment. Ponds are filled with water and regularly fertilized with cow dung and inorganic fertilizers. Ponds are stocked with fingerlings of Major Carps. Probiotics are regularly suppied in the ponds. Fish growth, chemical and microbial quality of pond water and its planktonic profile are regularly monitored.



Pond preparation and fish stocking

Fish culture in ponds supllied with probiotics

Comparative Study of Sex Reversal Methods of Genetically Improved Farmed Tilapia (GIFT) under Local Conditions

Researchers at Breeding & Genetics Section are conducting this research project under the supervision of Mr. Tariq Mahmood, Deputy Director Fisheries (Instructor/ Breeding & Genetics) to identify a suitable method for sex reversal of Tilapia. Tilapia brooders have been stocked in happas installed in earthen ponds at FR&TI for breeding. Eggs have been collected after hatching in incubation jars, fish fries are subjected to immersion in testosterone treated water for sex reversal. At present, treated tilapia fish fries are being grown in glass aquaria.

Tilapia egg collection for sex reversal

Sex reversal of Tilapia fry and Eggs in incubation jars

Rearing of sex reversed Tilapia fry in glass aquaria

Development of White Worms (*Enchytraeus albidus*) Culture System and its Effect on Fish Growth as a Feed Supplement

This project is conducted at Chemistry Section (R&T) under the supervision of Dr. Kashifa Naghma Waheed, Principal Chemist. White worms are being cultured using five different diet combinations. Production of white worms is also monitored at different temperatures.

Culture of white worms using different diets

Comparative Studies on Effectiveness of Various Hydrophytes for Phytoremediation of Sewage Water

Researchers at Chemistry Section (R&T) are working on this project under the supervision of Dr. Kashifa Naghma Waheed, Principal Chemist. The project is based on the phytoremediation of sewage water using different hydrophytes . A preliminry experiment to evaluate the effect of hydrophytes on chemical quality of sewage water has been completed. In the next phase of the experiment, hydrophytes selected in the preliminary experiment are cultured in sewage water in fiber glass tanks. Different chemical quality parameters of sewage water cultured with hydrophytes are monitored on weekly basis.

Hydrophytes cultured in sewage water

Analysis of sewage water treated through Phytoremediation

Breeding and Rearing of Ornamental Fish to Promote it as a Viable Cottage Industry

This project is also conducted by the researchers at Chemistry Section (R&T) under the supervision of Dr. Kashifa Naghma Waheed, Principal Chemist.. Successful breeding of glodfish has been achieved under captive conditions in earthen ponds of FR&TI. Currently, the goldfish fry is being reared in ponds and supplied with supplementary feed. Water quality of pond water and growth of fry is regularly monitored.

Breeding and rearing of goldfish in earthen ponds

Installation of Small Scale Aquaponics System for Demonstration at FR&TI, Manawan, Lahore

Researchers at Nutrition Section are working on this project under the supervision of Mr. Bilal Ahmed, Deputy Director Fisheries (Principal). Nutrient Film Technique (NFT) based aquaponic system is being installed at Shed No. 2 (FR&TI). Lady finger, gourd and lettuce seedlings are selected to be planted in the system.

Installation of aquaponics system at FR&TI

Effects of Varied Feeding Regimes, Photoperiod and Light on the Survival of *Wallagu attu* Post-Larvae

This project is also conducted at Nutrition Section under the supervision of Mr. Bilal Ahmed, Deputy Director Fisheries (Principal). Different trials are being run for sustainable culture of Moina that will be used as feed for *Wallagu attu* post larvae. Attempts for procurement of *Wallago attu* fry are also being made in coordination with hatchery managers of Biodiversity Hatchery Chashma and Fish Seed Hatchery Balloki.

Trials for optimum production of Moina to be used as *Wallago attu* fry feed

Development Projects

Establishment of Fish Seed Hatchery and Creation of Research Facility at Bhaseen

The Department of Fisheries is establishing a Fish Seed Hatchery at Bhaseen under the Development Project titled as "Establishment of Fish Seed Hatchery and Creation of Research Facility at Bhaseen" (Gestation Period; 2019-20 to 2021-22). FR&TI is establishing Research Facility there that will comprise of a thermo controlled Wet Lab and a pond complex. Construction of eighteen (18) earthen ponds is about to complete and the infrastructure for the Wet Lab has also been erected. Some civil works of the Project are still incomplete for which the Department has proposed extension of the project period for one year (2022-23).

POSTINGS & TRANSFERS

Ms. Qudsia Mushtaq has been appointed as Assistant Director Fisheries in the o/o of Director Fisheries (R&T) under the Development Project titled as "Establishment of Fish Seed Hatchery and Creation of Research Facility at Bhaseen" in April, 2022.

Ms. Zahra Khatoon, Senior Chemist (R&T), has been promoted as Principal Chemist on regular basis in May, 2022 and posted at QCL upon her promotion.

Mr. Sana-ul-Haq, Assistant Director Fisheries, Mahseer Fish Hatchery, Garyala, has been promoted as Deputy Director Fisheries on regular basis in May 2022 and posted at QCL upon his promotion.

Mr. Muhammad Naeem working as Assistant Director Fisheries, Publicity, on current charge basis has been promoted as Assistant Director Fisheries on regular basis in May and posted in o/o Director Fisheries (R&T).

Mr. Muhammad Dullah, Senior Clerk (QCL), has been entrusted with current charge of Assistant at QCL in May 2022.

STAFF STORIES

Mr. Muhammad Tayyab Rizwan, working as Assistant Director Fisheries, at FR&TI has been selected as Deputy Director Fisheries in the Department of Fisheries, Punjab, through Punjab Public Service Commission (PPSC) under quota for direct appointment of Deputy Directors. Mr. Tayyab joined the Department of Fisheries in February, 2019, as Assistant Director Fisheries. He is working as a committed and devoted officer at FR&TI. Director Fisheries (R&T) and other faculty members/ researchers have congratulated Mr. Tayyab Rizwan on this great achievement.

GLIMPSES OF ACTIVITIES AT FR&TI

Dr. Anser Mahmood Chatta, Director Fisheries (R&T), delivering lecture to participants of refresher training course conducted for Assistant Director Fisheries

Students from Superior College, Kasur, visiting Museum at FR&TI

Receiving of food samples from Punjab Food Authority at QCL

Certificate distribution ceremony for participants of refresher training course conducted for superintendents, statistical assistants & office assistants

Installation of aeration system for biofloc tanks

Microbial analysis of fish samples at QCL

Students from Minhaj University visiting Tilapia Research Center (TRC) at FR&TI

Sex reversal of Tilapia fry using different methods

Dr. Kashifa Naghma Waheed, Principal Chemist, delivering lecture to participants of Pre-Promotion training course for FRA/AWF

Hydrophytes cultured in sewage water for phytoremediation

Hands on training on Fish Disease Diagnosis for Fisheries Watchers

FARMER'S CORNER

Soil Sampling Method for Site Assessment for Aquaculture

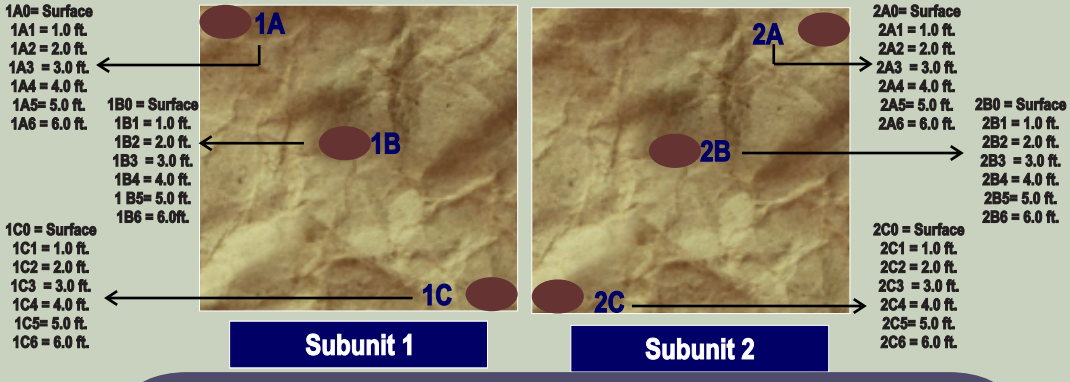
Assessment of soil quality is one of the crucial steps during site selection for aquaculture. FR&TI published a method to guide fish farmers about soil samples collection (Proceedings of Pakistan Academy of Sciences, Volume 58, Issue 1). Extract from the published article is presented below along with directions for sample storage and identification.

Collection of Soil Samples

- Soil properties show remarkable differences even within short distances, therefore, farmers should divide their site into smaller subunits.
- It will be advantageous if farmers may specify the area that will be used for the construction of one fish pond and consider it as one subunit.
- From each subunit, at least three sampling points should be identified covering two corners and the center of the area diagonally.
- From each sampling point, soil samples should be collected starting from the surface up to the depth that is 1 ft. deep than the final soil depth that will be dug during the construction of ponds.
- Soil samples from each sampling point should be collected in 1 ft. increment (i.e. from surface, 1 ft. depth, 2 ft. depth and so on.
- Each soil sample should weigh at least 0.5 kg sample for dry soil and 1.0 kg for wet soil.

Storage and Labeling of Soil Samples

- Soil samples can be stored in plastic bags with appropriate tags for identification.
- Paste the identification tag on each sample storage bag.
- Do not insert the paper slips as identification tags inside the storage bags. Moisture in the soil samples can tare off the paper slips.
- From one sampling point, soil samples can be identified as A0 (Surface), A1 (1.0 ft.), A2 (2.0 ft.) and so on (See the following figure further guidance).



Illustrative Presentation for Soil Samples Collection from one Sampling Site

فارمرز کا صفحہ

مٹی کی کوالٹی کے تجزیے کے لیئے مٹی کے نمونے لینے کا طریقہ

مٹی کی کوالٹی کا تجزیہ، ایکو اکلچر کے لیے موزوں جگہ کے انتخاب کے دوران ایک اہم مرحلہ ہے۔ فشریز ریسرچ اینڈ ٹریننگ انسٹیٹیوٹ مناواں لاہور نے مٹی کے تجزیے کے لیے نمونے (Samples) جمع کرنے کا ایک طریقہ شائع کیا ہے۔ (Proceedings of Pakistan Academy of Sciences, Vol. 58, Isssu 01) فارمرز حضرات کی رہنمائی کے لیے شائع شدہ مضمون سے اقتباس درج ذیل ہے۔ اس کے علاوہ مٹی کے نمونوں کو شناخت کے ساتھ محفوظ کرنے کے لیے ہدایات بھی ذیل میں دی گئی ہیں۔

مٹی کے تجزیے کے لیے مٹی کے نمونے لینے کا طریقہ کار:

ایک ہی قطعہ زمین کے مختلف حصوں میں مٹی کی خصوصیات میں نمایاں فرق دیکھا جا سکتا ہے۔ اس لیے بہتر ہے کہ فش فارم کے لیے مختص کی گئی جگہ کو ذیلی یونٹس میں تقسیم کر لیا جائے۔

اگر فش فارم کیلیے ایک سے زیادہ تالاب بنانے کا ارادہ ہو تو ہر تالاب کے لیے مختص کی گئی جگہ کو ذیلی یونٹس کے طور پر شناخت کر لیں۔

ہر ذیلی یونٹ سے کم از کم تین سیمپلینگ پوائنٹس (Sampling Points) منتخب کریں جہاں سے مٹی کے نمونے لیے جائیں۔ سیمپلینگ پوائنٹس اس طرح منتخب کیے جانے چاہئیں کہ ذیلی یونٹ کے دو کونے اور درمیانی جگہ ان میں شامل ہو جائے۔

نمونے لینے سے پہلے اس بات کا تعین کر لیں کہ تالاب بنانے کے لیے ذیلی یونٹ پر زمین کس گہرائی تک کھودی جائے گی۔

ہر سیمپلینگ پوائنٹ سے مٹی کے نمونے سطح سے لے کر تالاب کی تعمیر کے دوران کھودی جانے والی مٹی کی گہرائی سے ایک فٹ نیچے تک حاصل کریں۔

ہر سیمپلینگ پوائنٹ سے مٹی کے نمونے ایک فٹ گہرائی کے فاصلے سے حاصل کریں۔ جیسا کہ پہلا نمونہ سطح سے، دوسرا نمونہ ایک فٹ گہرائی سے، تیسرا نمونہ دو فٹ گہرائی سے لیا جائے۔

اگر مٹی خشک ہو تو مٹی کے نمونے کا وزن کم از کم آدھا کلوگرام ہونا چاہیے۔ گیلی مٹی کی صورت میں مٹی کے نمونے کا وزن کم از کم ایک کلو ہونا چاہیے۔

مٹی کے نمونوں کو شناخت کے ساتھ محفوظ کرنے کا طریقہ

مٹی کے نمونوں کو شناخت کے لیے متعلقہ لیبلز کے ساتھ پلاسٹک کے تھیلوں میں محفوظ کیا جا سکتا ہے۔
جس تھیلے میں مٹی کے نمونے کو محفوظ کیا جائے اس کے باہر شناختی لیبل چسپاں کر دیں۔
کاغذی پرچیوں کو شناختی لیبل کے طور پر مٹی کے تھیلوں میں نہ رکھیں ورنہ مٹی میں موجود نمی سے شناختی پرچیاں ضائع ہو سکتی ہیں۔
ایک سمپلنگ پوائنٹ سے لیے گئے نمونوں کو AO (سطح)، A1 (1 فٹ)، A2 (2 فٹ) کے طور پر شناخت کیا جا سکتا ہے۔ (مزید رہنمائی کے لیے مندرجہ ذیل تصویر ملاحظہ کریں)۔

تصویری رہنمائی: ایک سمپلنگ پوائنٹ کے ذیلی یونٹس سے مٹی کے نمونے لینے اور شناختی لیبل کے ساتھ محفوظ کرنے کا طریقہ

How to Reach FR&TI

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