DESCRIPTION OF PLANT PATHOGENIC MICROBIAL CONTAMINANTS IN BAMBAWALA RAVI BADIAN (BRB) LAHORE CANAL

Mukhtar Hussain Shah[1], Salik Nawaz Khan[1], Justina Jane Tahira[1,], and M. Farooq[2]

1. Institute of agricultural sciences , University of the Punjab, Quaid-e-Azam Campus Lahore, Pakistan
2. Directorate of Land Reclamation,Mughal pura Lahore

[Corresponding author: salik_nawaz@yahoo.com]

ABSTRACT: *Canal water is the most important source of irrigation which ensures sustainability of soil for long term productivity. The present study high lights the impact intensity of pollution of BRB canal on wheat productivity. The pollutants accumulate while passing through the sub-urban, densely populated areas by industrial, house hold and hospital waste. Residual and microbial contaminants add toxicity to soils by irrigation. The test parameters were prevalence and intensity of plant pathogenic bacteria and its impact on wheat plant health. Microbial analysis of water and soil micro favored microbial population count consisting on Xanthomonas nematophilis,Morganella sp Acinetobacter sp , Hafnia sp, Aminobacter sp Pseudomonas, streptomuces and solmonalla, bacteria and Aspergilus niger , mucor. Penicillium, aspergillus flavaus, sterile mycelium and Fusarium sp fungal species. The cumulative effect of chemical and microbial contamination resulted in poor wheat plant stand when seeded in canal water contaminated soils.*

Key words: Microbial contamination, residual toxicity, canal water, wheat

INTRODUCTION

The Bambawali Ravi-Bedian (BRB) Canal is situated at the east of Lahore city and belongs to Mughal era. Whereas during British rule it was extended to Raiwind town . IT is basically an athletic purpose canal which passes across rural, sun urban, thickly populated urban and posh areas. During its way it receives a wide range of community waste which includes house hold sewerage, hospital and cottage industry waste water. [1]. Toxicity level or intensity is always a question for municipality and PHA Horticultural Authority) management, Besides management concerns it has been an investigation interest for various research organizations and universities [8,2,1). The canal water is said to be toxic, polluted and unhygienic. Most of the investigations conducted on Lahore canal water quality relates to its chemical properties amount of sulfide, biochemical oxygen demand (BOD), chemical oxygen demand (COD), total dissolved and suspended solids , Cl^{-}disturbed pH balance and several other imbalances" because the chemicals are being thrown out into the canal [5]. Impact of pollutants on human health become more visible during hot summer days when people enjoy swimming and bath in canal. Citizens used to swim in that water and some even drink this, in fact polluted water can cause various diseases like hepatitis and skin diseases. It has been reported that pollutants are in excess of the limit which is set by national environment quality standards [4,3].

It is used to irrigating canal side plants, parks and flower to maintain of landscapes, protecting artificial forest, protecting against frost and reclamation of disturbed soils in dry areas and during the periods of inadequate rainfall [8]. The previous investigations on canal water pollution are focused on chemical quality of the water with respect to its drinking and irrigation use. Present investigations focused our attention on chemical as well as microbial contamination in canal water and accumulated silt.

MATERIAL AND METHOD

Samples collection

Different samples were collected for the analysis of soil and were collected from different localities.

Table # ?

Sr no	Sample	Sample site	Sample colour	Sample texture	Remarks
1	Un-cultivated land	PULahore	Light brown	Sandy clay loam	Not reported for any disease
2	Agricultural land	PULahore	Light brown	Sandy clay loam	Not reported for any disease
3	Botanical garden	PULahore	Whitish brown	Silty clay loam	Saline soil patches Not reported for any disease
4	Housing scheme	Taj pura	Slightly dark brown	Sandy clay loam	Damp soil, Not reported for any disease
5	Water course	PULahore	Dark brown	Clay loam	Not reported for any disease but used for irrigation to PU field
6	Canal bank soil	Harbans pura	Brown	Silty clay loam	Not reported for any disease

Pre requisite for Sampling

The following suggestions are offered on where and how to sample:

a) Visible or suspected salt crusts on the soil surface should be sampled separately and the approximate depth of sample recorded.

b) If the soil shows evidence of profile development or distinct stratification, samples should be taken by horizons or layers.

c) In the absence of profile development or distinct stratification, the surface sample (excluding the surface curst) should be taken to the plow depth, usually to a depth of 6 or 7 inches.

d) Succeeding samples may be taken at intervals of 6 to 18, 18 to 36, and 36 to 72 inches, or other convenient depths, depending on the depth of the root zones, the nature of the problem, and the detail required.

e) Sometimes soil sample taken for salinity and alkali determinations may be composited to reduce analytical work.

f) The size of samples will depend on the measurements that are to be made.

Preparation of soil paste

Fifty (50 ml) of water was added into a steel cup. Then 200gm of soil was added into distilled H_2O. It was stir it with Spatula until a fine paste of the soil is obtained.

Extract of soil paste

A blotter paper was placed in the plate of the soil paste extractor. Then it was wet with distilled water and let it dry. The paste was shake well with spatula and placed on the blotter paper. A bottle was kept under the extractor plate and machine was started to get the extract from the paste.

Isolation of bacteria

Fro the isolation of bacteria LBA (lorria broth ager) media was prepared by autoclaving

Bacto-Tryptone 10gram + Bacto-yeast extract 5gram + NaCl10gram + distilled H2O 1litre to make Total volume up to 1litre. Then it was poured into petriplates. After solidifying it 1 micro liter of soil extract was spread on it. Then it was incubated for 2 days

Isolation of fungi

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Fungal identification

Fungi were isolated by preparing MEA (malt extract agar) media by autoclaving 10g malt extract and 10 g agar in 500 ml distilled water. Anti bacterial was added during pouring into 9 mm petriplates. It was let to cool till solidifying. Then a pinch of soil sample was sprinkled on the media, it was sealed with scotch tape and was incubated at room temperature for 7±2 days.

RESULTS AND DISCUSSION

A wide range of Bacterial and fungal colonies were isolated from soil and water samples There are billions of soil microorganisms in a mere handful of a typical, garden soil. That single handful might well contain thousands of different species of bacteria, hundreds of different species of fungi and protozoa, dozens of different species of nematodes plus a goodly assortment of various mites and other micro arthropods. Almost all of these countless soil organisms are not only beneficial, but essential to the life giving properties of soil.

Different strains *Xanthomonas nematophilis,Morganella* sp *Acinetobacter* sp , *Hafnia* sp, *Aminobacter* sp *Pseudomonas, streptomuces* and *solmonalla* were observed. Due to unavailability of expert taxonomist we could not investigate species however microscopic and colony characteristics were studies. All of the bacteria were gram-ve, the colony color ranged from white, off white, yellow and orange having rod (Becillus) and round (Cocci) shape. The arrangement was classified into single, chain. Presence of endospore reflects their ability to survive under un favorable conditions.

There has been increasing interest on relation of plant growth with chemical nutrient of soil. Bacteria that are mostly found in samples are gram –ve and endospore forming. The fungi that are present mostly in the soil sample s but less in water course sample i.e. *Aspergillus niger* . Most of the fungi that are isolated are *Aspergillus sp,Bbotrytis sp Altarneria Fussarium,Penicillium etc* .

It is been found that all the soil samples have less pathogenic microbes and have less accumulated salts and toxin and can be used efficiently for cultivation purpose. Normal soil is those soils which are freely used for cultivation purpose

Table # ?

Sr #	Colour	Size Cm	Elevation Wrinkled/circular	Identified fungus
1	Leafy green	1.0	Circular	Aspergilus sp
2	Greenish gray	1.5	Wrinkled	Sterile mycilun
3	Leafy green	2.2	Circular	Aspergilus sp
4	Spinch green	1.5	circular circular	Aspergilus sp
5	Green	1.2	Wrinkled	mucor
6	White	3.5	Circular	Fuzarium
7	White	1.4	Circular	Penicilum
8	Black	0.5	Circular	Aspergilus niger
9	Black	2.0	Circular	Aspergilus niger
10	White	3.5	Circular	Penicilum
11	Black	2.0	Circular	Aspergilus niger
12	Greenish gray	1.5	Wrinkled	Sterile mycilun

13	White	3.5	Wrinkled	Fuzariuym
14	White	1.4	Circular	Penicilum
15	White	1.4	Circular	Penicilum
16	White	1.4	Circular	Penicilum
17	Black	2.0	Circular	Aspergilus niger
18	Leafy green	2.2	Circular	Aspergilus sp
19	Leafy green	2.2	circular	Aspergilus sp
20	Black	0.5	circular	Aspergilus niger
21	Gray	0.8	circular	Sterile mycilum
22	Spinch green	1.5	Wrinkled	Aspergilus sp
23	Green	1.2	circular	mucor
24	White	2.5	circular	Penicilum
25	Greenish gray	1.5	Wrinkled	Sterile mycilun
26	White	1.4	circular	Penicilum
27	Gray	2.0	Wrinkled	Sterile mycilum
28	Green	1.2	circular	mucor
29	Greenish gray	1.5	Wrinkled	Sterile mycilun
30	Green	1.2	circular	mucor
31	Leafy green	1.0	circular	Aspergilus sp
32	Black	2.0	circular	Aspergilus niger

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