EFFECT OF POLLUTED STREAM ON PLANT DISTRIBUTION AT DISTRICT SAHARANPUR (U.P.)

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Abstract: The present paper summarizes the distribution of plants along Pao Dhoi river water at one site before confluence and two sites after confluence of clean river water with polluted Dhamola river water at Saharanpur observation shows that some plant species show tolerance for polluted stream water.

Key words: Polluted water, Distribution, Tolerance.

INTRODUCTION

Most Indian river seems to be polluted by industrial effluent, municipal waste and sewage waste etc. Rapid industrialization and urbanization has resulted problems of water pollution (Varshney, 1981; Singh & Deol 2004). Bhuvaneshwari and Devika (2005) suggested causes of water pollution. Kiley (2007) found that no river water is clean, thus water can be pure in its vapour stage. Manoja Das (2008) reported that effluent from industry, domestic agriculture & run off surface water effects water quality.

Distribution of plants along polluted Kali river water at Meerut worked by Singh & Bhargava (1984). Kumar & Bhargava (1996 and 1997) also worked on distribution of plants along polluted river water at Saharanpur. Bhargava (2006) worked on floristic composition and distribution of plants along polluted river water at Saharanpur.

MATERIALS AND METHODS

The studies on the distribution of plant growing on bank of Pao Dhoi river done at one site before confluence and two sites after confluence. At each site, plants were sampled from clean stream side & polluted stream side as indicated in figure-I. At site 1, the clean & polluted water are separate, at site 2 shows running of clean & polluted water side by side relatively unmixed, however, at site 3 the water seems mixed and can not be visually demarcated. The terrestrial plants distribution was studied by quadrate method using a rate raft of 50 x 50 cm size, each site being 5 mt x 3 mt. size. Out of the total plant recorded the frequency, density and abundance of plant occurring in majority of the different sites are given in table 1. Water and soil samples were also collected from study sites and the color and pH recorded. These results given in table 2.

RESULT AND DISCUSSION

Table indicates the pattern of plant distribution growing near Pao Dhoi bank at Saharanpur. Observation shows that some plant species show a preference for polluted stream water. Thus *Amaranthus spinosus*, *Cannabis sativa*, *Parthenium hysterophorus*, *polygonum barbatum* & *Rumex dentatus* plants show higher frequency density and abundance on polluted streamside. In contrast, plants like *Sida cordifolia*, *Alternanthea sessilis* show lower frequency density and lower abundance on the polluted side. However, plants like, *Ipomea fistulosa* and *Veronica anagallis* show a nearly similar pattern with respect to their frequency, density and abundance. The location mentioned here is an excellent natural set up for comparative pollution studies as shows in this case that, although polluted water is generally detrimental to vegetation, certain plants have better survival in polluted water/soil. Such relatively tolerant species may be used as indicator/ accumulators as has been suggested by several workers (Srivastava & Pumima, 1998; Bhargava, 2006).

The results as given in table 2 shows that beside color of water being brownish grey, the pH found acidic upto site 2. Further, down the stream at site 3 due to mixing of water, pH values because nearly similar on both sides.

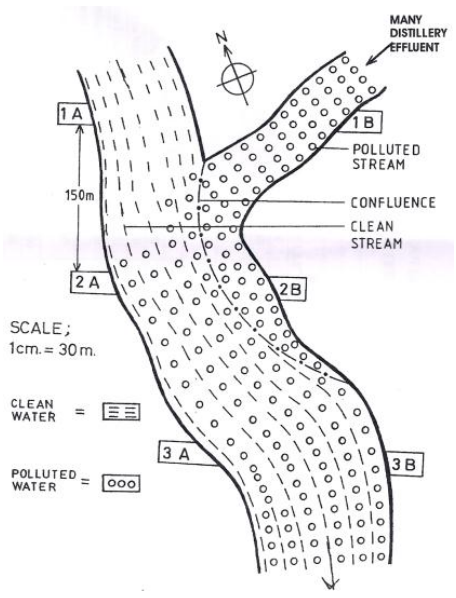

Table-1

DISTRIBUTION OF PLANTS ON CLEAN(A) AND POLLUTED (B) SIDES OF PERENNIAL STREAM AT DIFFERENT SITES BEFORE (1) AND AFTER CONFLUENCE (2&3) OF CLEAN AND POLLUTED WATER

Name of plant species	PLANT DISTRIBUTION AT SITES																	
	1						2						3					
	A CLEAN SIDE			B POLLUTED SIDE			A CLEAN SIDE			B POLLUTED SIDE			A CLEAN SIDE			B POLLUTED SIDE		
	F	D	A	F	D	A	F	D	A	F	D	A	F	D	A	F	D	A
Sida cordifolia	40	3.2	2.4	50	3.3	4.8	40	6.5	3.1	60	1.5	1.2	40	5.0	1.9	10	0.4	1.1
Alternanthera sessilis	40	2.5	2.4	50	3.2	1.2	60	5.2	3.0	50	1.1	1.3	50	6.0	3.2	10	0.6	0.7
Amaranthus spinosus	80	10.0	11.0	100	15.4	16.1	80	10.3	10.0	80	10.4	10.2	60	8.2	10.0	80	10.7	13.7
Cannabis sativa	80	8.5	8.6	90	5.0	6.3	60	2.5	4.4	90	10.2	9.0	60	2.4	4.4	80	10.3	10.5
Cyperus rotundus	60	10.0	7.6	20	2.6	1.4	80	10.0	10.4	30	2.0	1.8	90	6.2	8.4	20	2.5	1.3
Euphorbia hirta	6	6.0	5.0	50	2.0	3.0	80	6.4	5.2	40	2.0	2.4	90	5.0	4.5	40	3.1	1.9
Ipomoea fistulosa	70	3.4	5.2	50	3.4	5.0	40	2.6	3.2	40	3.4	2.7	30	4.0	5.0	60	4.6	4.2
Parthenium hysterophorus	80	8.4	5.0	90	11.2	10.8	60	6.8	4.4	90	9.0	10.2	60	5.0	4.4	90	8.7	8.6
Polygonum barbatum	70	9.5	6.6	80	10.5	9.1	60	1.4	1.0	80	9.3	8.6	50	0.6	1.0	80	8.0	7.8
Rumex dentatus	80	6.0	8.5	100	12.5	11.3	80	2.4	1.0	90	10.3	10.8	60	1.6	1.3	80	6.5	8.7
Veronica anagaliis	60	2.6	2.4	40	2.5	2.3	30	2.4	1.6	30	2.0	1.9	30	1.9	1.6	20	1.2	0.8

Table-2

CHARACTERISTICS OF WATER AND SOIL ON CLEAN AND POLLUTED SIDES OF KALI RIVER MEERUT AT DIFFERENT SITES BEFORE (1) AND AFTER (2 & 3) CONFLUENCE.

PARAMETER	CHARACTERISTICS OF WATER/SOIL AT SITES					
	1		2		3	
	A (CLEAN SIDE	B (POLLUTED SIDE	A (CLEAN SIDE	B (POLLUTED SIDE	A (CLEAN SIDE	B (POLLUTED SIDE
Colour of water	Light muddy bluish	Dark brownish grey	Light bluish	Greyish brown	Bluish-grey	Light grey
pH of water	7.0	6.8	6.8	7.3	7.0	7.1
pH of soil	7.1	7.2	6.8	6.4	6.5	6.8

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