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SOME SOIL – BINDING ALGAE FROM PESHAWAR, PAKISTAN

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Erosion causes loss of soil fertility and affects the vegetational succession. Plants are known to play a major role in controlling soil erosion. Treub (1888) observed gelatinous cover of blue-green algae on denuded island of Krakatau which provided habitat for the subsequent higher plants. The role of soil algae in nitrogen-fixation and soil-binding has been stressed (Harrison & Aiyer, 1913; Peterson, 1935; Elwell *et al*, 1939). Fritsch (1907, 1933) reported that algal mulch besides binding the soil provides better habitats for higher plants during succession by regulating soil moisture. Booth (1941) observed that algae prevent soil erosion by binding the soil particles. There are reports sbout the occurrence of blue green algae from saline soils and rice fields of the Punjab (Ali & Sandhu, 1972, Ali *et al* 1978). The present study deals with some of the soil binding algae from Peshawar.

Samples were collected from different places in Peshawar in September and October, 1979, from top layers of soils. Soil was eroded from all sides except a central compact patch, bounded by an algal cover. The algae cultured in soil extract (Faridi, 1971) under 16 h photoperiod at room temperature were identified after Desikachary (1959), Prescott (1962) and Pitschmann (1963).

Of the 32 species, *Phormidium, Oscillatoria, Lyngbya* and *Anabaena* having 29 species belonged to Cyanophyta, *Chlorohormidium* and *Ulothrix*, each with a single species belonged to Chlorophyta and *Heterococcus* with one species to Xanthophyta (Table 1). *Phormidium* and *Oscillatoria* were most common followed by *Lyngbya* and *Anabaena.*

All the species are filamentous and are capable of binding the soil. The gelatinous sheaths helps in the aggregation of the soil particles which are most resistant to soil erosion. Once soil particles get aggregated they provide a habitat for the species of the next stage in a succession. Since algae are poineers they are of prime importance in the intial stages. Blue-green, algae in addition to soil binding, would add to the fertility of soil by providing algal mulch and fixing nitrogen.

Table 1 . Some soil-binding algae isolated from Peshawar.

	CHLOROPHYTA
1	*Chlorohormidium flaccidium* (A. Braun)
2	*Ulothrix variabilis* Kütz.
	CYANOPHYTA
3	*Anabaena oryzae* Fritsch
4	*A. spiroides* Kleb.
5	*A. variabilis* Kütz.
6	*Lyngbya aerugineo-coerulea* (Kütz.) Gomont
7	*L. contorta* Lemm.
8	*L. lutea* (Ag.) Gomont
9	*L. truncicola* Ghose
10	*Oscillatoria anguina* (Bory) Gomont
11	*O. animalis* Ag. ex Gomont
12	*O. curviceps* Ag. ex Gomont
13	*O. formosa* Bory
14	*O. limosa* Ag. ex Gomont
15	*O. princeps* Vauch.
16	*O. splendida* Grev. ex Gomont
17	*O. subbrevis* Schmid.
18	*O. tenuis* Ag. ex Gomont
19	*O. terebriformis* Ag. ex Gomont
20	*Phormidium abronema* Skuja
21	*P. africanum* Lemm.
23	*P. corium* (Ag.) Gomont
24	*P. foveolarum* (Mont.) Gomont
25	*P. fragile* (Menegh.) Gomont
26	*P. jadinianum* Gomont
27	*P. incrustatum* (Nag.) Gomont
28	*P. purpurascens* (Kutz.) Gomont
29	*P. tenue* (Menegh.) Gomont
30	*P. truncicola* Ghose
31	*P. uncinatum* (Ag.) Gomont
	XANTHOPHYTA
32	*Heterococcus longicelluaris* Pitschmann

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