JOURNAL OF CRITICAL REVIEWS

ISSN- 2394-5125 VOL 7, ISSUE 04, 2020

ECOLOGICAL FEATURES OF THE NORTHERN FERGANA SOIL ALGAE

[1]Khusanova Onarkhon Gaybullaevna, [2]Kurbonov Ibrogimjon Sharifboevich, [3]Kamoliddinov Muhammadali Isroiljon o'gli

[1]Senior Lecturer, Department of Landscape Horticulture, Namangan Engineering-Technology Institute

[2]Department of Landscape Horticulture, Namangan Engineering-Technological Institute

[3]Student of the Namangan Engineering-Technological Institute

Received: 20 March 2020 Revised and Accepted: 06 May2020

Abstract: The article provides information on seasonal variation and distribution of species in the steep regions of the North Fergana Valley. It is explained that the occurrence of stenoterm and erythema species, the constant change of species due to the influence of environmental factors. Division species are systematically analyzed and scientifically based on the seasons.

Key words: Algae, section, species, variation, dominant, diatom, region, abiotic, biotic, anthropogenic, erythrocyte, stenotherm.

I. INTRODUCTION

To date, scientists have identified more than 2,000 species of soils. The algae found in the soils of various regions have a positive effect on plant growth and development. The systematic structure of soil aquifers has not been fully studied in Uzbekistan so far and its importance has not been practiced. Therefore, soil enrichment should be used to increase soil fertility in algoflora and to increase soil fertility in agriculture.

The complex effects of abiotic (light, temperature, pH agrochemical), biotic (microbiological) and anthropogenic factors on soil algae development have been reported in the literature [2; Pp. 167-168, 3; Pp. 33-38, 4; Pp. 14-20, 5; 83 pp. 10; Page 184].

The importance of soil algoflora, taxonomic composition, bioecological features, geographical distribution and the importance of soil aquaculture in agriculture by foreign scientists A. Lukesova (2001), D.W. According to Blinn et al. (2003), L. Andrade et al. (2004), Y. Harel et al. (2004), J. Neustupa, P. Scaloud (2005), S. Zancan et al. (2006), Y.V. Bataeva (2017), C.A. According to Maggs et al. (2018) et al. Pankratova (2001), L.I. Domracheva, L.V. Trefilova (2004), L.M. Safiullina (2009), L.H. Zaripova (2009), L.A. Gaysina, L.H. Abuzarova, G.R. Bakieva (2010), I.V. According to Novakovskaya et al. (2012) and others in the scientific work.

II. MATERIALS AND METHODS

Fieldwork included sampling soil by steep regions. Soil sampling was conducted throughout the year - in spring, summer, autumn and winter - based on a pre-planned route. Directions were mapped and the time and location of the samples were determined. Laboratory soil collection, planting, cultivation and microscopy testing were performed using techniques developed by Gollerbach and Stein. The collected specimens were used in the cultivation of soil algae and in the identification of the species, ordinary Petri plates and sausages. Initially, Petri's plates and sausages are covered by an autoclave made of special lids. 1.5 atmospheric pressure is sterilized at 1200 C. The process took about 20-30 minutes. Sterilized tubes are filled with 10 grams of soil and pour 100 ml of distilled water. Petri's plates were filled with 10 grams of soil and poured 50 ml of water. The tube and Petri plates were then stored in a moderate environment with sufficient light. After 1–2 weeks, microscopy of algae growth and development was investigated [13; Pp. 350, 14; Pp. 228].

ISSN- 2394-5125 VOL 7, ISSUE 04, 2020

III. ANALYSIS OF THE RESULTS

In the steep regions of the northern Fergana Valley, the amount and amount of soil algae varies depending on the seasons. The following results were obtained during our seasonal field studies in 2015-2018 at selected observation points.

The distribution of soil aquifers in the steep regions of the Northern Fergana Valley is shown in the following figure.

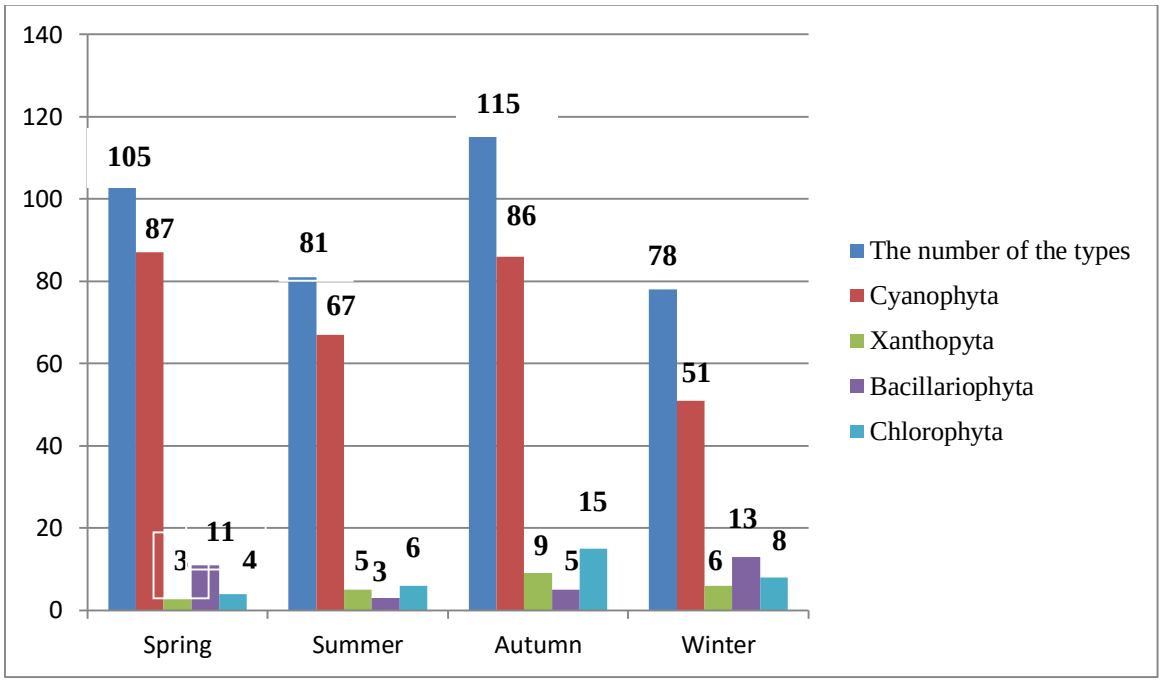

Figure 1. Seasonal distribution of soil algae in steep regions of the North Fergana Valley

In the spring, the study found that the number of species in the algoflora in the spring was 105 (an average of 42.51% of total algoflora), including 87 species of Cyanophyta, 3 species of Xanthophyta, 11 species of Bacilliophyta and 4 species of Chlorophyta.

During the summer months, the number of species was considerably decreased due to the increase in ambient air and soil temperatures, reduced rainfall rates and other factors. The total number of species identified was 81 (32.79%), including 67 species of Cyanophyta, 5 species of Xanthophyta, 3 species of Bacilliophyta, and 6 species of Chlorophyta species.

In autumn, air temperatures and soil temperatures decreased in comparison with the summer months, with increased moisture content and favorable conditions for soil algae due to the enrichment of humus, resulting in 115 species (46.56%). Of these, 86 are from the Cyanophyta, 9 species are from Xanthophyta, 5 are from Bacilliophyta and 15 are from the Chlorophyta.

During the winter months, the number of species decreased dramatically due to cooling of atmospheric air, freezing of the soil surface and reduction of nutrients. In our study, 78 species were identified during the winter, including 51 species of Cyanophyta, 6 species of Xanthophyta, 13 species of Bacilliophyta, and 8 species of Chlorophyta.

Quantitative and qualitative fluctuations of algae throughout the year depend on air temperature. However, some species of algae are found all year round, and they are able to survive even the most extreme temperature changes, which are eurite species. Species living in a narrow range of temperatures - stenotypes occur only at certain seasons of the year [6; Pp. 84-104, 7; 143 b, 8; Pp. 441-452].

In the study area, 29 euritimate species were identified. They accounted for 11.74% of the total species. It is noted that 26 species of erythrocytes belong to Cyanophyta, 1 species of Xanthophyta, and 2 species of Chlorophyta. The number of soil algoflora groups with respect to temperature is shown in Table 1.

Table 1

ISSN- 2394-5125 VOL 7, ISSUE 04, 2020

Classification of soil algoflora by temperature

Sections	Euroteric species	%	Stenotype species%	%	Total species
Cyanophyta	26	10,53	151	62,35	177
Xanthophyta	1	0,40	14	5,67	15
Bacillariophyta	-	-	31	12,55	31
Chlorophyta	2	0,81	22	8,91	24
Total	29	11,74	218	89,06	247

The data presented in the table show that euridimus species are not recorded in the Bacilliophyta section because species belonging to this section can only be found in specific subspecies. From euriterm species: Chlorogloea microcystoides, Nostoc punctforme f. populorum, N.verrucosum, Oscillatoria lemmermannii, Phormidium foveolarum, Ph.inundatum, Symploca cartilaginea, Botrydiopsis eriensis, Scenedesmus bijugtus.

The number of stenotherm species was 218, representing 89.06% of total species. Of these species, 151 species were Cyanophyta, 14 species were Xanthophyta, 31 species were Bacilliophyta, 22 species were Chlorophyta. In all sections, the stenotherm species dominated by numbers in comparison with the eurite species. Listed below are Synechocystis pevalekii, Synechococcus elongatus, Coccopedia turkestanica, Microcystis aeruginosaf. sphaerodictyoides, M.pulverea f.parasitica, M.grevillei f.pulchra, Gloeocapsa alpina f.ambigua, Entophysalis samoensis, Xenococcus kerneri, Nostoc zetterstedtii species, and occur only in certain seasons of the year.

Cyanophyta species dominated both the stenoterm and euridimeter species. This is because of their microscopic tallness, light and drought resistance, and the appearance of carpets in the wet soil. Among these, the Xanthophyta species are few, which is due to their inability to adapt to drought and extreme temperatures.

Among species of Bacilliophyta, only the existence of eurite species is due to the fact that they are common in specific ecological regions. This indicates that species belonging to this section are distinguished by their habitats in the upper surface of wet soil or in the mucous membranes of other algae.

Generally, species can be seen to vary widely in season and outbreak in eastern and western observation points.

The distribution of soil aquifers by environmental factors in the eastern part of the observations is as follows:

Of the species encountered in the spring; Synechocystis aquatilis (1 and 10 kn in spring: 3 and 6 kn in summer), Chlorogloea microcystoides (3kn in spring: 4,6,7,8 and 9 kN in summer), Oscillatoria brevis (3 kn in spring: 2,6,8 and 10 kn in summer)), O.lloydiana (3 kn in the spring: 2 kn in the summer), Phormidium foveolarum (1,2 kn in the spring and 6 kn: 5 kn in the summer), Ph.interruptum (1 kn in the spring: 5 kn in the summer), Ph. inundatum (5 kn in spring: 4 and 10 kn in summer) and Schizothrix mule (3,7,8 in 9 in spring: 2 kn in summer) also appeared in summer. Oscillatoria utermoehliana (5 kn), O.rupicola (2 and 3 kn), Phormidium boryanum (2 kn), Symploca cartilaginea (1 and 4 kn), and Ilsteria quadrijuncta (1 kn) were encountered in spring and summer. Most of them live in the spring and summer and at high temperatures and on wet and humid soils.

The total amount of soil algae varies continuously due to changes in atmospheric temperatures, precipitation, humidity, sunlight and other environmental factors [8; Pp. 441-452, 9; Pp. 231-237, 11; Pp.332-336, 12; Pp. 26-29].

In our research, we learned more about changes in the composition and quantity of soil aquifers under the influence of environmental factors.

1 In spring 69 species and the types of species (38.12%) were recorded,atmospheric air temperature of 240C, soil temperature 280C and precipitation at 29.6 mm at 1,2,3,4 and 5 observation points in the eastern region. They include 58 species of Cyanophyta, 2 species of Xanthophyta (Botrydiopsis application), Ilsteria quadrijuncta (rare), 8 species Bacilliophyta (Melosira islandica var procera (rare), Achnanthes andicola (more), Navicula bacilliformis (more), Epithemia zebra (single).), Nitzschia bilobata (more), N. distant (rare), N.parvula (rare), N.obtusa (rare), species 1, Chlorophyta (Closterium archerianum (very rare)). The number of species in

ISSN- 2394-5125 VOL 7, ISSUE 04, 2020

the Cyanophyta section has been widely recorded, which is due to the increased moisture and light content of the species and the favorable conditions in the spring. land rights, creating conditions for the growth of plants enrich the nutrient content of the soil will speed up the metabolism such important tasks.

2. In summer, the atmospheric air temperature increases at 1, 2, 3, 4 and 5 observation points in the eastern part, is 38-390C, soil temperature is 440C, rainfall is 6.8 mm, blue-green and green algae. There was a slight increase in the number of a total of 61 species (33, 70%) and species were listed at these points, including 48 species of Cyanophyta, 5 species of Xanthophyta (Botrydiopsis eriensis (many), Monodus subterranean (rare), Pleurogaster lunaris (rare), Ilsteria quadrijuncta.), Tribonema vulgare (numerous), 2 species Bacilliophyta (Achnanthes dispar var. Capitata, more. Navicula lacustris Greg. Parallela (more)), 6 species Chlorophyta (Chlorococcum infusionum (many), Dictyococcus pseudovarians (more), Hydrianum) species belonging to the horizontale (very rare), Palmadictyon varide (numerous), Palmella miniata (very few), Scenedesmus bijugtus (more) groups.

3. A total of 76 (41.99%) species and species were identified in autumn at the observation points 1,2,3,4 and 5 in the ambient air temperature 280C, soil temperature 320C, precipitation 14.9 mm. Of these, 61 species are Cyanophyta, 6 species are Xanthophyta (Pleurochloris polychloris (rare) Botrydiopsis eriensis (more), B.arhiza (more), Tribonema monochloron (less), T. vulgare (more), T.intermixtum (more).three types of Bacilliophyta (Navicula halophila f.subcapitata (rare), Cymbella hybrida (more), Nitzschia stagnorum (less), 6 species of Chlorophyta (Dictyococcus pseudovarians (less), Chloroplana terricola (more), Palmadictyon varide (more), Palmella miniata (more).), Scenedesmus bijugtus (numerous), Oedogonium acrosporum (rare), recorded in the summer Synechocystis salina, Microcystis aeruginosa f.pseudofilamentosa, Gloeocapsa dermochroa, Gl.minuta f.minuta, Nostoc punctct. f.sphaericum, Oscillatoria guttulata, O.lemmermannii, Schizothrix lutea, Plectonema boryanum f.hollerbachianum, Botrydiopsis eriensis, Tribonema vulgare, D ictyococcus pseudovarians, Palmadictyon varide, Palmella miniata, Scenedesmus bijugtus species also found in autumn Holopedia irregularis, Microcystis pulverea f.racemiformis, Gloeocapsa species, f.subnuda, Gl minima fatoria, Oscillia, Oscillidae,. It has been established that species of botus, Botrydiopsis, also occur in the fall. In addition, spring and summer Chlorogloea microcystoides, Nostoc verrucosum, Phormidium foveolarum, Ph.interruptum, Ph. Inundatum, Symploca cartilaginea species were also observed in the fall.

The aforementioned re-occurrence of the above-mentioned species in summer and spring can be attributed to the adaptation to atmospheric air temperatures.

4. In winter, atmospheric air temperature was -6,7 + 150C, soil temperature -8 + 200C, with precipitation amounting to 19 mm, 45 algae (24, 9%) and species were identified. Of these, 34 species are Cyanophyta, 3 are Xanthophyta (Botrydiopsis eriensis (very numerous), Chlorocloster terrestris (rare), Heterococcus caespitosus (very numerous), 7 species Bacilliophyta (Melosira Dickiei (more)), M.baicalensis (many), Fragilaria atomus. species), Achnantheslanceolataf typica (rare), A.brevipes (many), A.brevipes var.intermedia (more), Amphora veneta (more), type 1 Chlorophyta (Ankistrodesmus tortile (very rare)) . A decrease in the number of species in the Cyanophyta, Xanthophyta, and Chlorophyta species has been observed due to lower air temperatures, freezing of the soil surface, depletion of nutrients and sluggish metabolism. The relatively high number of species belonging to the Bacilliophyta section is explained by the fact that in an adverse environment anabiosis occurs. This is because the dominant occurrence of Cyanophyta species in the summer and autumn species is a bit difficult to identify in the Bacilliophyta species. The frequent occurrence of spring is caused by moderate air temperatures and demand for nutrients. Chlorogloea microcystoides, Nostoc verrucosum, Phormidium foveolarum, Ph.inundatum and Symploca cartilaginea can be found in all seasons. These species are characterized by adaptability to life in all conditions.

The distribution of soil algae by environmental factors in the western part of the observation points is as follows:

1. In spring, the number of species in the east is lower than the east, with air temperatures in the range of 30-31,70C and soil temperature 350C, the amount of rainfall less than 25 mm and most of the areas under cultivation, erosion, sparse vegetation. A total of 53 (34.42%) species and species were identified at these monitoring points in the spring, including 45 species of Cyanophyta, 1 species of Xanthophyta (Botrydiopsis eriensis), 4 species of Bacilliophyta (Diploneis late-elliptica), and Navicula Americana. (species), Denticula elegans (more), Nitzschia distans (more), 3 species of Chlorophyta (Hydrianum horizontale (single), Binuclearia tatrana (rare), Bulbochaete setigera (rare).

2. A total of 43 species (27.92%) were recorded at the observation points in the summer, including 38 species of Cyanophyta, 2 species of Xanthophyta (Botrydiopsis eriensis (numerous), Tribonema vulgare (rare), and 1 species of Bacillariophyta (Navicula hungarica). , Type 2 is classified as Chlorophyta (Hydrianum horizontale (single), Palmella miniata (more)). At these observation points, atmospheric air temperatures (38-39

ISSN- 2394-5125 VOL 7, ISSUE 04, 2020

<400C) and soil temperature (44 <450C) were relatively high, with low precipitation (6> 6.8). This has contributed to the decrease in the number of species.

3. In the autumn at the western monitoring points, the ambient air temperature (28 <27,30C), the low soil temperatures (32 <300C), the amount of precipitation 14 mm, the increased humus content and the small amount of ground water, due to irrigation water. A total of 68 (44.16%) species and species were identified in soil algoflora. Of these, 46 species are Cyanophyta, 7 are Xanthophyta (Pleurochloris imitans (rare), Botrydiopsis eriensis (numerous), Bumilleria klebsiana (rare), Tribonema monochloron (numerous), T. vulgare (numerous), T.intermixtum (rare), Heterococcus caespitos. rare)), 3 species Bacilliophyta (Achnanthes marginulata (more), Navicula cryptocephala var. Exilis (many), Nitzschia stagnorum (rare), 12 species Chlorophyta (Chaetopeltis orbicularis var.orbicularis (rare), Hypnomonas schizochlamys (many), H .tuberculata (numerous), Apiococcus consociatus (numerous), Chlorococcum dissectum (more), Dictyococcus irregulares (more), Chlorosarcina minor (many), Protococcus viridis (many), Trebouxia arboricola (many), Palmadictyon varide (more), Scenedesmus bijugtus (more). In the spring and summer, species such as Synechocystis aquatilis, Microcystis hansgirgiana, Nostoc verrucosum, Microcoleus chthonoplastes were also observed in autumn.

4. In winter, the air temperature at the observation points was -7,5 to + 15,50C, with soil temperature from -8 to 20.70, with a precipitation rate of 19 mm. A total of 50 (32.47%) species and species have been identified in soil algoflora during these years (Table 6.2.2). Of these, 32 species are Cyanophyta, 5 are Xanthophyta (Botrydiopsis eriensis (more), Botryochloris minima (many), Bumilleriopsis brevis (very rare), Bumilleria klebsiana (more), Heterococcus caespitosus (rare), and 6 species Bacilliophyta (Melosira undulate).), Frustulia vulgaris (numerous), Nitzschia epithemioides (more), N. distans (more), N. Clausii (more), Surirella linearis (more), 7 species of Chlorophyta (Dictyococcus pseudovarians (many), D. mucosus There are species belonging to the following sections: Protococcus viridis (rare), Scenedesmus bijugtus (rare), Chlorolobion lunulatum (more), Oedogonium acrosporum (numerous), O.macrandrium (many).

In the western part of the study, Chlorogloea microcystoides species was found in other seasons except in spring. Oscillatoria lemmermannii, Phormidium mucicola, and Botrydiopsis eriensis are found in all seasons.

As a result of seasonal changes in soil aquifers under the influence of environmental factors, the major amount of soil algae was observed in spring and autumn. Due to favorable conditions for spring and autumn growth, the number of species was 105-115 species (42.51-46.56%). In winter, air temperatures were relatively rare, with temperatures below -100C in summer and temperatures above + 450C in summer. 78-81 species (31,58-32,79%) were found in soil aquifers. Seasonal variations in the total amount of algae have been found to vary across cultivated and non-cultivated soils. In our study, it has been noted that in the western vertical regions of northern Fergana, low plains, such as irrigated light gray soils, are more common in spring (22 species) and in summer (18 species) than in other seasons. Soils in the hill, hill, piedmont and mountain regions are characterized by non-irrigated light, dark, typical and mountainous types.

IV. SUMMARY

In summary, the surching revealed that the 2015-2018 rainfall season, seasonal and climate variability in soil composition are also different. In the years when humidity is 50% or less, there is a significant decrease in the number of soil algae, especially in the summer, due to high temperatures and drought. For example: in 2017, the precipitation was less than the maximum (2.5 mm), so soil algae were rare. Similar phenomena were also observed in the mountainous regions of Italy in the 1960s [1; Pp. 228]. The occurrence of these soil aquifers varies from 500 to 2500 m in the steep regions. In Italy, the number of species is also dependent on the amount of rainfall, air temperature, moisture content, and changes in soil humus. Therefore, species belonging to the Cyanophyta section are reported to have been found at an altitude of 2,500 m, which is abundant (1399,000 for 1 g of soil) in the high mountain pastures.

V. REFERENCES:

1. Gollerbach M.M., Steina E. A. Pochvennye hydrogen - L.: Nauka, 1969. - 228 p.
2. Korneva L.G. Instructions for the construction of phytoplankton species and acidification of hydrocarbons at the VIII Congress: Quick.doc. —Kaliningrad, AN. T.1. 2001. - p. 167 - 168.
3. Lokhova DS Vidovoy compost and ecologo-geographical characteristic diatomovy hydrodynamic perifitone stacked plate pri raznyx sokax ix exposition (Quarantine Bay, Chornoe more) // Ecosystem, ix optimization. - Kiev, 2012. - No. 7 (26). - C. 33-38.

4. Masyuk N. P., Posudin Yu.I. The pH sredy on the parameters of the photodetection Dunaliella salina Teod. (Chlorophyta) // Algology. - Ukraine, 2007. - No. 9 (1). - p. 14-20.

5. Musatova O.V. Bioindication and biopovision. - Vitebsk: Search UO "VGU im. P. Masherova", 2005. - 83 p.

6. Pankratova EM Поченные цианобастегии в прошлом Zemli and iekologichesky role in nastoyashchem i vmozhojnaya v budushchem // Ecology and pochvy. - Pushchino. 2001. - p. 84 - 104.

7. Shtina E. A., Gollerbach M.M. Ecology pochvenny vodorosley - M.: Nauka, 1976. - 143 pp.

8. Shtina E.A. How to find an ecologic index in hydrogenated // // Botanical Magazine. - T. 1990. - No. 1. - S. 441-452.

9. Sccherbina VV, Maltseva IA, Solonenko AN Osobennosti algogruppirovok stepny biogeotsenozov postpirogennogo razvitiya biosfernogo zapovednika "Askaniya-Nova" // Siberian Ecological Magazine / Part: 21 - Moscow, 2014. Vypusk: 2. - p. 231–237.

10. Blinn D.W., Herbst D.B. Use of Diatoms and soft algae as stream abiotic determinants in lahontan basin, USA. 2003. –P.184.

11. Khusanova OG, Kamoliddinov MI, Muhammadjanova DB THE TAXONOMIC STRUCTURE IN SOIL WATERWEED IN THE ALTITUDINAL BELT OF THE NORTH FERGANA // Asian Journal of Multidimensional Research / - India, 2019, Vol 8, – P. 332-336.

12. Onarkhon G., Khusanova Kh., Alimjanova X.A. STRUCTURE AND TAXONOMIC ANALYSIS OF SOIL ALGAE STEEP AREAS OF NORTHERN FERGHANA IN WINTER // European science review / Scientific journal, Austria, 2018, ¬ 7–8. - P. 26-29.

13. Gollerbach M.M., Polyansky V.I. Overproduction of presnovodny hydrogen USSR. Vyp. 1. Frequency. Presnovodnyx hydrogen i ix explorer. - M .: Sovetskaya nauka, 1951. – 350 p.

14.Gollerbach M.M., Stein E. A. Pochvennye hydrogen - L.: Nauka, 1969. - 228 p.