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Review Urban Wastewater Contamination in Agronomical Soils

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ABSTRACT

In order to investigate the effects of using sewage sludge and other municipal and agronomical wastes on soil microbial contamination, four types of organic fertilizers including sewage sludge, animal manure, waste compost and mixtures of wheat straw and alfalfa in greenhouse experiments in the form of completely randomized designs Evaluated. Investigating the changes in the microbial population of the mixture of these fertilizers with soil including bacteria, fungi, and actinomyces, the study of the population of coliforms has been a specific goal in this research. The highest number of bacteria and fungi was observed in the waste compost and sewage sludge fertilizers and the highest populations of actinomycetes in wheat straw. The count of the coliforms showed that in the first week of incubation, the total chlorophyll population is very high in animal manure. During this period, some of the chlorophyll bacteria were detected in sewage sludge fertilizers, animal and compost waste. Also, in this research, hidden slide technique is introduced as one of the best methods for investigating the ecological diversity of soil magnifier organisms.

Keywords: *Sewage Sludge, Soil, Environment, Microorganisms*

INTRODUCTION

Soil can cause transmission of many infectious diseases. The number of germs that are added to the soil through contamination increases the amount of soil contamination. The study of the physical and chemical properties of waste, or organic fertilizers, has long been done to optimize and make informed use of them. In the meantime, the biological properties of organic fertilizers are ignored in the above studies and it is advisable to use organic fertilizers without their comprehensive biological and environmental studies. Since the soil is the basis of drought organisms, especially human societies, pathogens are transmitted to humans and animals by various forms of dust through respiration and superficial wounds. Therefore, the biological characteristics and population of the microbial flora should be determined by soil pathogenicity. Coliforms that are Enterobacteriaceae bacteria are usually evaluated as indicators of water and soil contamination. Enterobacteriaceae family is a large group of bacteria that are widely distributed in nature. These bacteria are found in the human intestines, animals, soil and water, which are known as intercostal bacilli because of their lives in humans and animals. All of these aerobic and anaerobic bacteria are optional, gram-negative, spore-free and bar-

shaped, have a respiratory and fermentative metabolism, and have the ability to ferment glucose. In addition to the production of various diseases, as these bacteria live in the gastrointestinal tract, they can infect all tissues and organs as soon as they reach any point in the body. In Isfahan, due to the existence of an organic fertilizer plant and a number of wastewater treatment plants, large amounts of waste compost and sewage sludge are consumed each year in agronomical land and because of the use of these fertilizers, biological monitoring is carried out. It can therefore have an adverse effect on the environment. The present study was carried out to evaluate the microbial contaminations of agronomical soils, which are treated using waste water and waste products.

MATERIALS AND METHODS

In this research, four types of organic fertilizers including sewage sludge, animal manure, waste compost and wheat straw mixture, as four main treatments (two percent by weight), with non-fertilized control in three replications in a completely randomized design in greenhouse experiments they were evaluated. These experiments were generally performed in three sections including the determination of the population of bacteria, fungi, economists in the soil, soil infiltration to the chlorophylls and identification of the dominant microflora in different treatments by hidden slides. To determine the microbial population of the soil, soil samples were prepared in different treatments of suspension and then dilution series, and ultrasonic vibrations were used to disperse the aggregates and remove microorganisms from the soil particles. After preparing the dilution series, agar culture medium was used for culture of bacteria from PDA chloramphenicol medium for culture of fungi and from Jonson Agar culture media for cultivating actinomycetes.

After incubation, all of the colonies were counted on the culture medium by the colic of Kuiper counter. Multiphasic fermentation method was used for studying chlorophylls in Broth Lactose Broth and EMB and assay and confirmation tests and IMVic. The results were reported as MPN. To view the microorganisms by the hidden slide method, the culture medium is arranged in a sterile way and placed in a thin layer on a glass slide. Then place the nutrient in the soil containing the soil in the desired treatments. After 4-7 days of incubation at 30 ° C, remove the slurry from the soil, after washing and heating, in order to fix, remove the lam using the paint it is warm, colored and photographed by microscopy with magnifications

RESULTS AND DISCUSSION

Among the treatments, the highest number of bacteria and fungi were observed in waste and wastewater compost fertilizers. The results of analysis of variance also show the significance of the effect of storage and fertilizer treatment on the number of bacteria and fungi. Perhaps the cause of the increase in the number of bacteria in sewage sludge is C / N ratio of this fertilizer. This ratio makes the conditions for organic matter degradation possible for microbial strikes, and bacteria that are mostly active on C-N materials are less active. Grow and reproduce in a short time. Several reasons can be made about the increase in the number of bacteria in the compost fertilizer. First, many researchers believe that the presence of nutrients and possibly some vital catalysts in the waste compost can aggravate bacterial growth. Also, a high population of N-stabilizing bacteria in this fertilizer can provide a permanent source of nitrogen for bacterial growth and reduce the effect of C / N on this fertilizer to some extent. In this regard, the results of various experiments have shown that cellulose degrading bacteria grow much better in the vicinity of nitrogen-fixing bacteria because of their strong need for nitrogen. The addition of degradable organic matter in different treatments led to the removal of fungi from phonedisation and fertilizer and to activate their active growth. The results show that the penicillium, aspergillus, alter aria and fusarium genus, which are considered as flawed fungi High percentages of soil fungi. In addition to the above mentioned fungi, in the treatment of sewage sludge, fungi of chrysosporium, trichophyton and scopolariusis were observed in the treatment of animal manure of Mukur and Pylomyces mushrooms in the sewage treatment of fungi of Chrysosporium, Trichodonium and Trichoderma, and in the treatment of cladosporium, Psilomyces, Raziopus and Trichoderma. The presence of cellulose degrading fungi such as Alternation, Aspergillus, Fusarium, Penicillium and Ricinusspp, especially in herbal treatment, shows the importance of this process.

Also, the majority of actionist populations were observed in straw and wheat fertilizers. Comparison of average population of antimonites showed that plant manure had the

highest significant effect on control and had no significant difference with compost fertilizer. Finding and doing their work on remaining residual parts.

Schedule Results

The results of the study of changes of chlorophylls in different treatments showed that at the first time, animal manure was the most pollutant in terms of the number of coliforms in the soil. This can be attributed to the novelty of the used fertilizer used. At the same time, fertilizers Sewage sludge and waste compost have respectively the highest population of coliforms after animal manure. In a week later, the population of chlorophylls in a soil containing animal manure still shows a high population. In the soil treated with sewage sludge, coliforms decreased significantly and about a quarter of them have arrived. Because of this, chlorophylls are known to be short-lived as opportunistic bacteria in the soil. After reducing the nutrients used, as well as the competition of other organisms with them, their populations in all treatments also decreased in the third and eighth weeks.

The results of analysis of variance showed that the storage time of fertilizer and soil mixture had a significant effect on the level of one percent in the population of chlorophylls. Also, the comparison of the mean population of the coliforms shows that their population at the first and second sampling times as well as the comparison of the mean population of the coliforms showed that their population at the first and second sampling time, as well as in the fifth and sixth sampling times did not have a significant difference, and treatment The manure had the most significant difference at the 5% level with the control. However, before reaching the results, it seems that the treatment of sewage sludge should have the highest population of chlorophylls. This can be attributed to the reduction of the population of chlorophyll during the purification process as well as the exposure of sunlight to sewage pools.

Mr.Arbabi performed on sewage treatment systems in Isfahan and some biological and chemical parameters of the effluent. He reported that the average total population of chlorophyll in the wastewater from the entrance to the southern wastewater treatment plant in the six months of sampling was 4.3 * 108 in 100 ml and in the wastewater Output from the treatment plant is 8.6 * 105 in 100 ml. These values in the northern treatment plant are 109 * 3.8 per 100 ml, which is due to the fact that the waste water from this treatment plant is used for irrigation, and on the other hand, as the WHO standard for the number of coliforms is 1,000 calories per 100 ml,so such a waste cannot be used in agronomical irrigation, and it is necessary to consider extrapolation measures such as chlorination or aerobic logging in order to estimate the WHO standard. The results show that sewage sludge fertilizers, animal and compost waste have the highest microbial potential in the soil, and should be considered in this regard. The place of use is necessary. The thesis of the other side seems to suggest that the presence of these bacteria in the above treatments and in the early days of the addition to the soil is much higher. Therefore, there is a considerable gap in their addition to the soil and the use of the necessary products.

Hidden Slide Technique Result

The results of hidden slide technique in five stages of sliding in 10 days' intervals in different treatments show that sewage sludge treatment has more variety in the clay than other treatments. The C / N ratio of this fertilizer caused the bacteria to be very high and in different treatments, all slides of this treatment are observed. In this treatment, some of the bacteria in sewage sludge, such as zygote pods and micrometrics, have been observed, which is responsible for soil contamination with these types of microorganisms. Diatoms and some algae observed in the slides of this treatment were not seen in any other slides. And this sign of a population of algae grows in sewage sludge pools.

In animal manure, Vibrio and micrococcus bacteria have the highest number and the potential contamination of this fertilizer to these microorganisms. Due to the presence of plant tissues in this fertilizer, the population of fungi has increased over time. In the treatment of manure compost, the bacteria mainly have a shark layout that is considered for environmental contamination. Also, the population of nematodes in this treatment showed more increase than other treatments, and the population of fungi also shows a higher increase in the last stages. With sporulated silos without spores and the accumulation of fungi in all stages of sliding in the plant fertilizer, it is shown that cellulose decomposition and C / N degradable materials are high. John Koldam said that preserving the fertility of the soils, while

also contaminating them, is an indispensable factor for long-term production in agriculture. Hence, the proper use of urban and agronomical wastes as organic fertilizers will have very important effects.

Wandering Waves

At six o'clock in the morning, we leave Kerman to the destination of the dreams. The golden land of the ancient Iranian civilization, where the Yahiya hill is said to be in the middle of history and talks with history. When the ancient civilization seeks this border of canvas, which we can also spell We raise ourselves, and after leaving behind, we will put the effect of foot on the sands of time, that is, what makes a man high, not the intensity of the high feelings that they are lasting, that is, the durability and endurance of the soul.At 10:30 AM, we are on the spot, but this time, we will not visit the Yahiya hill that we visit the Zakaria Fountain and enter the plain, where the farming zone is dancing, and from there we go to the spring, where a spring from the bottom of the rock but it's been dry for many years and it's gone. According to Haj Hassan Towhidi's visit. He was born in 1316 and has spent all his life in this area and his white hair is the reservoir of experience.

According to Mr. Tohidi, the area of the plain has ten volumes and its water is much higher than the other areas of Sagan, whose water was supplied from the Zakaria River, while the Muhammad Abad also had a name with 50 wells, but now it is not a trace of the Zakari River, nor the Qanat Muhammad Abad

The tragedy began in 1355, when the pomp was opened to this system. When Fazeli's captive dug in the plain of the first ten deep wells in Wali'Abad and KhawajiShafiyyah, and since then in the 40's there were wells, and after the revolution so far they have reached more than 500 circles in the same manner. Water circulation was 6 days a day, and each dung was given 24 hours of water and from sunrise until dawn.

With Tohidi, we go to the pilgrimage of King Zakaria, where the sacred water of those years has been the subject of public attention. The road is to reach this riverbed, and when it comes, from two sides of this pilgrimage there are two streams of water coming down, the old cedar tree, which has been watching for centuries, still watches the time, is completely dry, but there are a few green hawks on top of it. He says that this Zakaria tree is called Zakaria the prophet and the nearby tree of Hermon Saronaz. This sheronaz was the sister of Zakaria, and these two trees have come together and today they are the people of Hazar. These trees are closed. All open mouths reveal a wish and a heartbreak. Inside the shrine of the king of Zakaria, there is a stone of stone or stone. The will of the intention, which is taken away after the intention, if it came to be heavy that does not come to pass, if it came to light that it would be fulfilled, then this place would shelter people and their treasures and property. This water has always been at the attention of the people. This blessing is the blessing of this pilgrimage and this pilgrimage is the blessing of this water. And the ancient trees of this system have resurrected five periods, and there are four mills along the Zakaria River, whose works are still alive, and thus this holy water originates from here. A few yards later, it falls to the ground and this water is wandering...

I wonder why this water is not used? Why falls in the sand? Why do not you move it down to the bottom of the hand? Unless this water rotates the four mills of the mill? Do not you say that the water of this river went to the gardens of ten, so why now this water drops in the sand? Cannot you set up a fish pond here? Can it not be downgraded and farmed? Can it not be suggested that it be invested and that a closed Hindi mineral water plant set up? But does not each of these take the unemployed? So what does procrastination mean? It has to move. It should be done. Not that the water is wandering, and we are thirsty. It should work, because what constitutes a river is not just water, but also the river bank.

Mr. Tohidi said that the work of Mohammad Rahim Alidadi and the leader of the Nawalah who were the headmasts were respected by the people. Now, the Qanat of Ebrahim Abad, Sarkhan and Naset Abad are forgotten. Dawlat Abad's great reputation was that it began with the same gas station. And traversed a 35-kilometer route to Dolat-Abad. Ten people were kept in the water, but changed at once in 1342. The wells that made the mines shifted the water pipeline of the state government to the ground below the surface of the earth. Those wells were so rich that more than ten pumps of the pump engine were unable to discharge the wells. However, after that, the Dolat Abad Aqueduct as long as it now remains, and if the new generation does not know what Qanat is?

The land reform was also a scourge of the Qanats. When the Talents were divided, the lords were discouraged and the farmers who owned the land could not work on the aqueducts, and the Qantani group did not trust that these farmers would be able to pay their expenses as a result of the destruction of the Qanatsand I remember Abdullah Alidadi, who did not work mirab and DarwishNusayri who was Dashtiban.

Mr. Tohidi says that the Americans were working on the Yahiya Hill for years. I was responsible for logistics and provided food for them, and the costs were returned to me in return, and I provided everything I wanted.

Mr. Bakhtiari says that the villages of Sagan have a symbolic meaning. Gatchin has springs for sheep and cattle. These waters, because of the flavor of gypsum, are not usable for human beings, and this is why this region is called Gachin, but now there are no springs. In 1964, in Ghezin, Ali Akbar JamshidiSirjani dug the first pump and started the land reform in the same year.

The landmark of Sorkhan comes to the red soil in this region, and this area and Ebrahim Abad have been raised by Ibrahim Khan Shapur of Kerman. The Sarkhan aqueduct was very lush and was destroyed in 1354, the Ebrahimabad Abad was the most polluted by the 1356 flood.

There were 4 grinding mills on the Qanat path. NematollahAmiri was the most famous jailer, and Alexander Big was also a repairer of mills. HashimZangiAbadi was also the head of the QanatDolat Abad group that brought him from Zangi Abad in Kerman, and now his heirs live in this area. Baghan is considered the bottleneck because all the surface waters are ending there. The Baghan Aqueduct has dried up in 1988, and now its water is pumped. The village of Fathabad was nomadic settlement.

Mr. Bakhtiari says that the year 1341 was dying and the locusts also rushed. All the camels left their sheep and went and nothing to eat.

At 7/7 the morning after the hosts we will say goodbye to the servants and we will leave Sagan to Faryab. All the ruins and rocks of the road are said. From the valleys that are on the way. But you must go. Should discover the new world. Many of the diseases around us are due to poverty and ignorance. People are sick because of the illiteracy and indifference of the community, and so long as we do not accept reality, we cannot succeed in solving a lot of problems. There is no problem that there is no solution. At the end of the asphalt road, we will head to the last village belonging to the city of Baft, which the reason for the existence of many soils on the river's route is known as this river. The water of this river is above the hand of Zieland and flows into the sand in Chayin. Still, the waves of water are still wasting of energy and energy.

The waterfall is also known as the waterfall. The spittoin is flooding everything and sloping water means the water moves in a steep slope.

From there, along the mountain road, passing through the shrubbery of the highland, we reach a village called the water of the wind, which has a small hot water with pots of two palm trunks around it. The water drops out of the ground and goes out to say they are useful for many diseases. It's like gout, kidney stones, and if you want to find it and make it sweaty.

Together with Mr. Nuri, we visited the Al-Qinats. He said that the sign is similar to two narrations. First, because of the presence of mines of chromium, gold and copper, none of which have been extracted, they are referred to as "synonyms" Is. Secondly, around these ten water pressures are high and drain for drainage, and because there are many drainage channels, they say that they are intermingled. The central body of the neighboring company along with the outposts of the contract is the oldest aqueduct. The water of the aqueduct in a few yards of the land after the manifestation of Sand falls and wanders. While in the aqueduct, the fish farm is built or water is plumbed into agriculture.

Mr. Nori says there was a blast in the aqueduct, which flooded in 1340 and took the Qanat and the mill. In the year 1341, snow fell, and after that, the drought and grasshoppers became a scourge.

Mr. Nuri's hospitality is commendable and we say goodbye to it. We continue to Faryab. Faryab means superfluous, where the waters of the region end there. The village is famous for its tree name.

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