

Increase in Crops of Saxaul and Calligonum on the Quarry “South Shetpe”

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Introduction

1. Mangistau Nature in Brief

Mangistau half-island (Mangyshlak), being a harsh and enigmatic land, spreads out between the Caspian coast and endless deserts. At first sight, a visitor may see Mangistau as a dead desert where parching winds blow and dust storms rage. However, there are also green oases and picturesque canyons on the Mangistau half-island. It is located on the East Coast of the Caspian Sea and belongs to Kazakhstan (area of Mangistau region is 165.1 sq.km). At first thought, Mangistau is endless and desert-like fields covered mainly by sage. But this impression is deceptive. The half-island is unique both in terms of its native diversity and beauty.

If someone tells you that Mangistau is monotonous, not to take it seriously. Of course, the half-island is essentially a desert, and there cannot be any forests, fields and rivers. Shell stones and sand stones provide here the basis for everything. They are everywhere and they are a heritage of the ancient ocean. Mountains and rocky buttes consist of them, and the houses are built of them.

2. Human Being and Nature

Human being and nature are inseparable from each other and tightly interdependent. Both for a human being and society as a whole, the nature is an environment for living and a single source necessary for resources. Nature and natural resources are the basis for human society for living and development, a source to satisfy the material and spiritual needs of people. Human being is a part of nature and as a living being its life activities significantly affect the natural

environment. However, such effect is incomparable with that influence which a human being has on nature due to its labor. As distinct from animals, the human being is beyond biological control of the natural environment and has an opportunity to extend its needs far beyond the scope of satisfaction of primitive physiological functions.

Apart from depletion of natural resources, the industrial development caused a new problem: environment pollution. Water bodies, atmosphere air and soil are mainly polluted by industrial wastes. These pollutions had adversely affected the soil fertility, flora and fauna; moreover, they constitute an essential hazard to health of people.

Almost every day the newspapers say about air pollution. It is not surprising: this matter is of great concern, we could not breathe without air and without breathing there is no life. In recent years, an acute air pollution has been registered which is related to expanding the industrial locus, equipping of many areas of our life with technical means. Effect of harmful substances entering the air can be strengthened by their mutual reactions between themselves, accumulation in major cities, their long-term occurrence in the air, special weather conditions and other factors. It is impossible to disregard air pollution. The air pollution happens very quickly in areas with high population density, accumulation of plants and factories and a lot of transport means. Smog can occur when air circulation is restricted because of weather conditions. The major sources of air pollution are motor transport and industrial plants.

Life is impossible without water and air as well as it is impossible without soil where the plants grow and most of animals live.

3. Impact of the quarry on Ambient Nature

Shetpe is a village (a settlement previously), administrative center of Mangistau district of Mangistau region in Kazakhstan and the one populated locality of Shetpe rural district.

HeidelbergCement has completed a construction of new CaspiCement plant in Mangistau region, Shetpe settlement. This is a large plant where the local citizens can get a job. Let's say thank for this. But there are disadvantages as well, for example, an impact of the quarry on environment.

Being established artificially, the quarries exist just till a human being keeps them. As a rule, the environmental specialists consider the quarries just as a negative event since its establishment damages a soil covering, disrupts a balance of ground water dynamics and the trees are cut down. Explosions and noisy equipment frighten the animals and birds. The quarries can adversely affect environment in variety of ways.

4. Increase in Crops of Saxaul and Calligonum on the Quarry “South Shetpe”

The Quarry “South Shetpe” is located in Mangistau region of Shetpe settlement. It is a desert and semi-desert area. There are almost no rains in Shetpe, humidity is low and climate is hot, therefore we have few plants.

Green plants which inhabit the planet create all conditions for living organisms to live. The plants as is known disengage oxygen which makes it possible to breathe. They are basic food for many living organisms. Even wild animals depend on plants as they are eaten by the animals being a target for their hunting. Tree leaves, tall grasses create mild and humid micro-climate since they protect the ground from scorching rays of the sun and parching winds. Their roots prevent the soil from creeping, fasten it preventing from gully development. As we see, the plants have a significant impact on the environment, on all elements of biosphere (animals, people, etc.).

5. Goal

The Supreme Being created this world with a wonderful harmony. The trees and plants exist in it and it is impossible to imagine the world without them. However, excavating clay loam to the quarry it will result in soil changes and decrease in plants. Therefore, our project is aimed to set and increase saxaul and Calligonum artificially in the quarry “South Shetpe” since these plants do not require much water and care. The plants for the basis of ecological pyramid: animals eat plants, a human being eats both plant and animal food. There are a vast number of trees in the world. Human being plays a key role in earth planting as it has a tremendous benefit for everyone.

Saxaul is one of the most typical and wonderful plants of a desert. Plant height is 4–5 m. There are 10 species of saxaul, all of them grow in semi-deserts and deserts of Asia. Saxauls have a paramount practical importance for deserts. On the one hand, they are active sand binders, on the other hand – the best fuel material under conditions of treeless desert. Saxauls are also used to bind the drift sands and to plant. Its lifetime is about 40 years. There are 10 species of saxaul, all of them grow in semi-deserts and deserts of Asia. Two species grow in Kazakhstan and Central Asia:

- black saxaul
- white saxaul

Saxauls



The most important bushes of the desert are Calligonum of different kinds. It looks entirely leafless. But it has leaves which are too small, nearly invisible. Thin green twigs function as the leaves which appear on the plant each spring. Calligonum is one of the best sand binders. The entire development of Calligonum happens too fast, and the bush reaches its peculiar size at the age of 5-6 years. Approximately at the same age, the first blossoming is observed. Root system of an individual grown-up specimen occupies a vast area since the length of branch horizontal roots is about 20 m. Leaves are nearly invisible, linear, needle-shaped or subulate, with length of 3-7 mm, its base has squamous-leather-like amplexicaul bell, caducous. During summer, a photosynthesizing function is performed by one-year green sprouts, cylinder-shaped, relatively thin, and caduceus in autumn as well.

Calligonum



The Quarry “South Shetpe”



6. Methods

These plants can be set using the following methods:

- 1) set saxaul and Calligonum in nurseries.
- 2) set saxaul and Calligonum using the seeds.

We can offer setting saxaul and Calligonum in nurseries. We are government environmental institution and have our own nurseries and man power. We can gain time due to setting in nurseries. If we choose the first method we shall proceed with work in spring. We are located in Shetpe settlement and we made the nurseries for some auls in Mangistau region.



Planting is performed in two stages: in spring, saxaul and Calligonum are set using the nursery plants, in autumn – using the seeds. As practice shows, the nursery plants take root better, but it is cheaper to plant with the seeds. Therefore, the most of forest plantations falls within the second method. These plants were chosen not coincidentally since they pertain to a group of halophytic plants which adsorb salt. Furthermore, they are unpretentious enough, and do not require watering and special care. It is very easy to plant the saxaul. All we need is a stick and nursery plant. The stick is used to make a quarry with depth of 20-30 cm where the nursery plant is placed and the quarry is covered in. That's all!

I work as Environmental Specialist in the government environmental institution and we have repeatedly set these plants in auls in Mangistau region. We do not have to look for people or labor power to implement our project because we have special workers, inspectors and own nurseries. So, it shall not be difficult to set them.

Our colleagues set saxaul and Calligonum.



Saxaul set by our colleagues 5 years ago



Together with all project participants we visited the Quarry “South Shetpe”. It rains rarely in Shetpe. But when we were there, there was raining. It was interesting for all of us. We were acquainted with the quarry and plant. We made photo as mementos. I was glad to participate in this project.

Our visit in Caspi Cement LLP plant



Conclusions

Each of us who constitutes oneself as a particle of the world mankind is obliged to know how human activity affect the world around and be sensible of responsibility for one or another actions which cause own concerns regarding the nature, as a home which provide meal, warmth and other conditions for normal life.

Human activity is too aggressive and extensively destructive (reformative) power on our planet. From the beginning of development, a human being finds himself as a master of the world around. But as the adage tells us: “Don't rock the boat”. If one wrong decision is taken, probably tens and even hundreds of years shall be required to correct a fateful error. Nature balance is too fragile. If to think seriously about own activity, very this activity will start to strangle the mankind itself without doubt. However, the first steps towards the nature have been already made. People start to respect the nature, take care of it and maintain a simple order in it. Although a great deal of pollutants is disposed, it is still not enough. We should not to dispose the pollutants but to prevent

pollution. The world association is required as well as long-term, well-coordinated and purposeful activity of driving and producing forces.

Executive Summary

Tree planting is an act of kindness. Saxaul planting is not just an act of kindness but a matter of concernment. This tree plays a key role in life of deserts. Please, help the nature. Nature, people, animals, birds, everyone will thank you for this....

The purpose of this work is to show how easily to change the quarry which has destructive effect on environment to a good leisure area for human being and to habitat for animals and plants. Of course, this requires certain costs and time but I think that they will earn its keep in full.

It's our choice what to do with our activity – to keep doing harm to the world around or to change negative consequences to positive ones. It's our choice.

