

выводы о содержании элементов питания в почве, определенных с помощью капиллярного электрофореза, и их доступности для растений.

Финансовая поддержка: Работа выполнена при финансовой поддержке РФФИ в рамках научного проекта № 19-316-90001.

Acknowledgments: The reported study was funded by RFBR, project number 19-316-90001.

Библиографический список

1. Абрамов Н.В. Дифференцированное внесение минеральных удобрений с использованием космических систем // Агропродовольственная политика России. 2014. № 2 (26). С. 2-8.

2. Комарова Н.В., Каменцев Я.С. Практическое руководство по использованию систем капиллярного электрофореза «КАПЕЛЬ» // СПб.: ООО «Веда», 2006. 212 с.

УДК 502/504:630*53

RESEARCHES AND DETERMINATION OF TERRESTRIAL CARBON DIOXIDE IN THE SOIL OF THE LANDS OF QAZVIN PROVINCE (QARPUZABAD) WITH THREE TYPES OF VEGETATION

Shima Mohammadi, Postgraduate student, Soil Science of Russian State Agrarian University –Moscow Timiryazev Agricultural Academy, E-mail: gesoom2011@yahoo.com

Abstract: *In this study, the soil of Qarpuzabad region of Qazvin has been studied. The soils belonging to this region are extremely salty. Indigenous plants are characterized by saline soils. The amount of carbon sequestration was measured at 270 cm at a depth of 30-0 cm and 486 tons per hectare at a depth of 100-0 cm. The distribution of organic carbon in the soils of the studied areas is plotted as GIS maps.*

Keywords: Carbon Alloy, GIS, Plant Species, Clay, Chlorate, Electrical Guidance, Plaster

Significant changes have taken place in the planet's climate within last two decades. The most important reason for these changes is the increase in temperature, the increase in temperature is also affected by the emission of carbon dioxide gas and its increase in the intermediate atmosphere (troposphere) which creates a greenhouse state. According to experts, the average temperature increase on Earth in the twentieth century was one degree, and if carbon dioxide gas increases in the same way, by the end of the twenty-first century, the Earth's temperature will rise by about 3 to 4 degrees.

In this case, the polar ice caps will melt, the sea level will rise (about 2 meters), and countless plant and animal species will disappear. Drought in some countries will reduce the yield of crop and livestock products. Hunger and poverty will spread to many countries.

According to experts (2011, Powlson), the amount of carbon dioxide at the beginning of the industrialization of Western countries (1750 years ago) was 280ppmv (parts per million by volume) and in 2013 it increased to 405 ppmv.

Fossil fuels such as oil, gasoline, gas and other factors such as forest fires, destruction and erosion of soil and the conversion of forests into cultivated lands and unfavorable agricultural factors. Examining the carbon cycle on Earth, it has been proven that soil is the most important carbon reservoir in the world.

The amount of organic carbon in the soil is 3 times more than in carbon and in the tissue of all plants and twice as much as in atmospheric carbon. The amount of soil carbon is estimated at between 1,500 and 2,000 gigatons (Girard et al. 2010).

The amount of carbon trapped in the soil under the influence of climate change is the type of soil (soil characteristics) of vegetation. According to the theory (2009, al. Lalet), carbon sequestration in soil under pasture cultivation is 2.49 kg / m² and in soil under coniferous plants is 10 kg and under coniferous trees is a mixture of 8.5 kg / m². Studies by Balesdent (2009) in three plant ecosystems are also shown in Table 1.

Table 1

Comparison of organic carbon changes in three types of ecosystems

Wheat cultivation	Wide forest (temperate region)	Amazon Forest (tropical warm)	
6	80	200	Plant biomass
40	70	90	Organic carbon in the soil 30-0 cm
80	100	150	Organic carbon 100-0-0 cm

In Iran, the amount of biomass in plant carbon is calculated at 1147 kg / ha (Tirtash et al., 2010). The forest of Iran has been determined to be one meter deep at 1307 tons per hectare. In dry lands of Buin Zahra, the amount is 2 tons per hectare (Haghshenas, 2011) and in the soils of Verti Sol Kermanshah 1430 tons per hectare has been calculated (Parsamenesh, 2011). In some unfavorable agricultural conditions and conversion of forests into cultivated lands, organic carbon in the soil gradually oxidizes and enters the atmosphere as carbon dioxide and produces greenhouse state (Brahmin et al., 2002). The organic matter in the soil is calculated from the product of the percentage of carbon in the specific gravity of appearance in grams per cubic centimeter and the thickness of the soil in centimeters.

However, the amount of organic carbon in the soil only determines the percentage that destroys a large amount of soil due to annual erosion. By destroying the soil, its organic matter is oxidized and enters the atmosphere in the form of carbon dioxide. According to the 1995 Kyoto Protocol, the 22nd Earth Warming Conference in Doha, UAE, has decided to reduce emissions by about 20 percent by 2050. Of course, fossil fuels are an important factor in increasing carbon dioxide. In recent years, experts and researchers have conducted numerous studies on carbon sequestration. Currently, several research projects have been proposed in Iran. One of them is the UN project, which is to be carried out on several thousand hectares of

land in Khorasan province. Among these studies is the UNDP project in the Central Province.

But so far no tangible results have been published. Our research on carbon sequestration has been conducted in Qazvin province. In the first stage, these studies include determining the physical and chemical characteristics and dominant grades of soils, and in the second stage, it will determine the amount of carbon absorbed per ton per hectare. With the help of the results, we have drawn the scary carbon maps of GIS in the region.

Studied and researched area in the province: Qarpoozabad Kamal Abad lands of Qazvin

Table 2

Climatic Specifications, Vegetation and Soil

Soil specifications	Vegetation	Steaming and sweating	Rainfalls	Region
Saline soils	Plants	810	250	Qarpuzabad, Qazvin

From the point of view of climatic characteristics, the ratio of celestial precipitation to evaporation and transpiration is less than 0/50. That is evaporation and transpiration is more than twice the annual rainfall. We briefly study the characteristics of the soil and vegetation, as well as the amount of carbonaceous carbon, for the region.

With the help of topographic and geological maps, the study area has been determined and drawn per thousand hectares in each region. Based on a scale of 1: 25000, 20 points were numbered and at each point the profile (face soil) was dug to a depth of 1 meter or 1.5 meters.

After morphological studies of the profiles, 2 kg of soil was collected from the horizons. The samples collected in the laboratories were subjected to physical and chemical analysis as follows.

The specific apparent weight of the cylindrical method; Touch or compaction soil texture; Soil pH with electric pH meter; Electrical conductivity (EC) Electrometric conductivity; Automated carbon, Roche Dalkey-Black; Total lime, calcimeter

Plaster, Stone method; Scaled Carbon Distribution Maps with Microstation Software Transfer to GIS Software Part 1 (Figure 1).

Soil and terrifying characteristics of organic carbon in Qarpuzabad region (Kamal Abad Qazvin)The studied land is located around Qarpoozabad village, Ahmadabad village, Savojbolagh city (30 km west of Karaj). The soils of this region are located on the alluvial alluvium of geology. These deposits are rich in saline salts, more or less rich in gypsum and lime. The vegetation cover consists of saline Halophytes species, which can be found in the following species, which make up more than 90 % of the cover.

Soil in 1100 hectares, 20 profiles and morphology from each of the horizon profiles have been studied. The most important chemical properties of these soils are

salinity (the electrical conductivity of the horizons is more than 15 degrees Siemens per meter), which is observed in all depths of the soil. . It is extremely poor in organic carbon. Due to its high salinity, only salinity-resistant species are able to survive in such soil.

The majority of salinity-resistant plants (halophytes) such as:

- Salsola salsola;
- Peganum harmala Spand;
- Hordum spontaneum wild barley;

From these points, the soils are classified as FAO and WRB in the Solowchak unit and in the 2010 American Classification under the Solids category. Sequestration in saline soils in this area.

20 profiles have been drilled in 1100 hectares. In each profile, at two depths of 30-0 cm and 100-0 cm, experiments have been performed to determine the fear.

The average fear at two depths is 30-30 cm and 100-0 cm in 20 soil samples, respectively. 30 cm -0 = 279 tons per hectare; 100 cm -0 = 486 tons per hectare. With the help of Microstation software, GIS maps have been drawn for scattering of carbon.

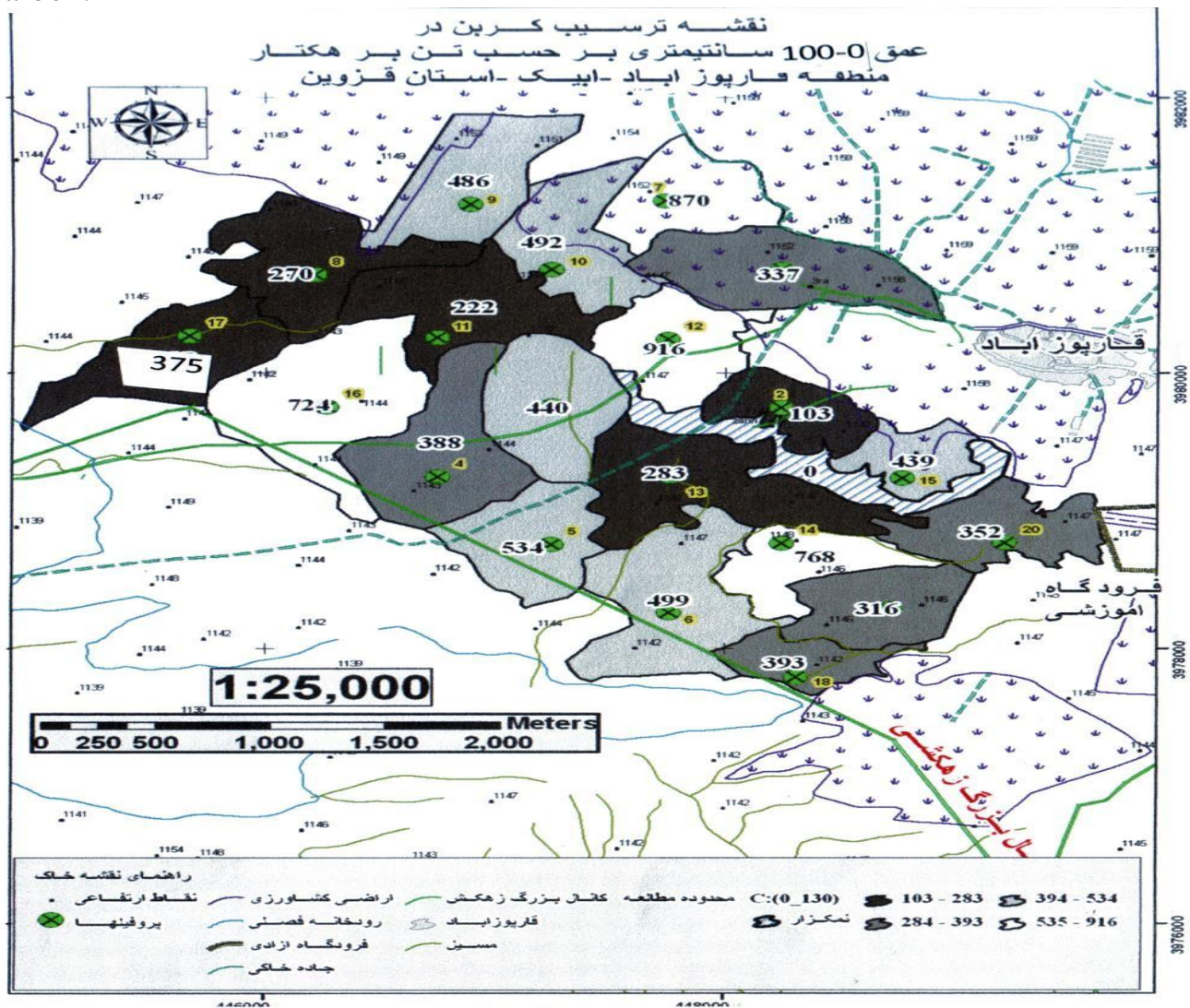


Fig. Organic carbon sequestration at a depth of 100-0 cm in soil profiles of Qarpuzabad region by ton per hectare

As we have discussed in the study, the most important factor in increasing the temperature of the planet is the increase in the temperature of the earth and the increase in carbon dioxide gas in the atmosphere. Since the industrialization of Western Europe and the United States (157 years ago) by 2013, the amount of carbon dioxide gas has increased by 30 percent. If carbon dioxide gases are increased in the same way, the average annual temperature on Earth will rise by 3 to 4 degrees by the end of the 21st century, which will be catastrophic for all creatures on Earth.

An important factor in increasing carbon dioxide gas is fossil fuels such as oil, gasoline, gas, and diesel, which must be used to burn forests, destroy forests, turn forests into cultivated lands, and engage in wrong agricultural operations on land. As we discussed in the introduction, soil is the largest reservoir of organic carbon (in the form of organic matter). The amount of organic carbon trapped by the soil is affected by climate change, the type of vegetation, and the type of physical and chemical characteristics of the soil. Our studies on the soil of this region with three types of vegetation with relative changes in climate.

The region (Qarpuzabad) has an extremely saline soil and native plants are composed of salinity-resistant species.

Considering the contents of this review and interpretation, the results can be summarized as follows:

There was a stronger relationship between soil organic carbon and its yield in soils with a salinity of more than 6 C/m compared to soils with a salinity of less than 6 C/m. These results showed that the limitation of saline and light soils can be largely eliminated by increasing organic soil carbon. As a result, it is suggested that in order to prevent the loss of organic carbon and its oxidation in the form of carbon dioxide, it is necessary to prevent the use and incorrect agricultural operations such as deep plowing of the soil and also prevent grazing (back grazing).

References

1. Balesdent, J. 2009. Unite de recherche géochimie des sols et des eaux (GSE). Europole Mediterranee. Arbois-BP. 135-45. Aix provence.
2. Batjes, N.H. 2010. A global frame work of soil organic carbon stocks under native vegetation for use with the simple assessment option of the carbon, benefils project system.
3. Batjes, N.H. 2004. Estimation of soil carbon gains upon improved management, within croplands an grasslands of Africa, Environment development and suistability. Volume 6, Issue 1-2pp, 133-143.
4. Batjes, N.W. 2005. Total Carbon and nitrogen, in the soils of the world. Soil science, European Journal of soil science. Volume 47 Issue 2 page 151-163, Article, First.
5. Bettina, J.; Tamon, Y.; Ludwig, B. & Heiners, F. 2004. Storage of organic carbon in aggregate and density fraction of siltysol under different type of landuse. Geoderma, Volume 128, 2005, pp 63-79.