7 – TOM 6 – SON / 2024 - YIL / 15 - IYUN

MOISTURE CAPACITY OF THE SOIL

Ma'rufjonov Javohir
Student of Fergana State University

Abstract: *All plants wilt at the same level of humidity. The rate of wilting does not depend on the age of the plant. The wilting coefficient varies according to the type and type (granulometric composition) of the soil, that is, the same plant or all plants will have different wilting coefficients in different soils.*

Key words: *soil, water, moisture, wilting, recovery, porosity, hydromorph, nutrition*

Since the soil is a pore system, its pores are always occupied by water or air. But due to the size of existing pores and the meniscal forces created when they are filled with water, water is retained in one or another amount. That is why the field, capillary and moisture capacities of soils are different.

The maximum amount of water retained in soil capillaries (pores) for a long period of time after irrigation or heavy rainfall without flowing down (into percolation) is called soil field moisture capacity (DNS).

This form of soil moisture capacity is a very important hydrological constant that allows us to think about the amount of water needed by the plant. DNS changes in proportion to the characteristics of the soil, first of all, its granulometric composition, that is, the field moisture capacity of the soil increases due to the increase in mechanical composition. If the mechanical composition of the soil in the vertical profile is the same or close to each other, then the capillary suspension (amount of water) field moisture capacity decreases legally from top to bottom. Since the upper layers of the soil are rich in porosity and humus, the moisture capacity of the field is high in these layers. If the soil profile consists of different granulometric (mechanical) composition, the amount of suspended capillary water does not obey the above law, in which the DNS depends on the mechanical composition of a single layer.

It is known that the wet capacity of the field, regardless of whether water is absorbed from above or from below, is mainly determined by the following:

• Depth of underground water (for gravitational water moving under the influence of gravity);

• Granulometric composition of the soil;

• aggregate;

• compound density.

The next two factors, the amount of humus in the soil and the absorbed amount, are not important in the conditions of Central Asia. (but this does not include the case of scalding).

According to the instructions of S. N. Rizhov, even if the level of underground water drops later, the moisture capacity of the field does not change in the soil with a thickness of 1 m. In this case, the movement of groundwater due to compression from below does not pass above the lower 50 cm layer of this 1 m layer. But this situation is not always the same.

Before moving on to the issue of the effect of granulometric composition on the field moisture capacity, it is necessary to mention that all types of soil, including sand, should be included in 3 groups according to the classifications made by A.A. Rode, that is, in the group of fine-grained soils.

In all types of soils in the irrigated zone, the same fractions (i.e. large dust) are the majority. According to A.A. Rode, these fractions serve as a boundary that separates coarse-grained soils from fine-grained soils. Therefore, the field moisture capacity in the irrigated soils of Central Asia has its own special properties. Most often, these properties arise due to the stratification of the soil.

In hydromorphic soils, regardless of the mechanical composition, the field moisture capacity is always large due to the compression (rise) of underground water.

The main factors that cause an increase in field moisture capacity and a slight change in the effect of granulometric composition are soil friability, layering of parent rocks, soil salinity and structurelessness. Since the next three factors are especially evident in the soils of the desert zone, the tendency to increase the moisture capacity of the field in the same soils is evident. But A.A. Rode (1952) based on the work of Wilcox and Spilsbury showed that the granulometric composition does not significantly affect the amount of field moisture capacity in some soils that are affected by moisture from top to bottom.

According to its granulometric composition, Central Asian soils have an average DNS (% by mass) of sandy and loamy soils of 8-12; light sand 12-15; average sand 16-20;

In the region of gray soils, if the soil is not saline, depending on the moisture capacity of the field, it is assumed that there will be a wet zone of the following amount in a 1 m thick layer. (S.N. Rizhov, V.YE. Yeremenko):

On light soils - 2200 m3 per hectare

In soils of average weight - 2800 m3

In heavy soils - 3500 m3

There is now a lot of material characterizing the aeration conditions of Central Asian soils when they are wetted to field moisture capacity. Including S.N. Rizhov (1948) confirmed that 20.40% of the soil of the Ferghana Valley, and 15.45% of the soil of the lower Amudarya River, remains suitable for aeration when it is fully moistened with respect to the moisture capacity of the field.

In hydromorphic soils, this percentage is somewhat less; all pores in these soils can be filled with water (not only water seeping from above, but also water rising from below). And in bald people, this percentage is somewhat higher.

All types of irrigated soils of Central Asia are adequately supplied with air when the moisture content is equal to the moisture capacity of the field.

According to the equation of water balance created by S.I. Tyuremny, the wet capacity of the field (when water is absorbed from above) is inversely proportional to the volume weight of the soil, and directly proportional to its porosity.

This is one of the reasons for the increase in field moisture capacity in the upper horizons of the soil. In this regard, it seems that the volume of the moisture reserve in the soil that has absorbed water equal to the field moisture capacity does not depend on the change in the volume weight of the soil.

S.N. Tyureminy and B.N. The above-mentioned rules of Michurin G.Z. It does not correspond to the data of Biyashev (1936) on experiments conducted on irrigated soils.

A. A. Rode (1952) used the main conclusions of G. Z. Biyashev and some figures from his materials in his work devoted to the completion of this issue. Here we present only its main conclusion. A.A. Rode in his conclusion that "when the volume weight increases from 1.05 to 1.45, the minimum moisture capacity of dusty soil increases, and when the volume weight increases from 1.45 to 1.65, this minimum moisture capacity "It will decrease again," he said.

G.Z. According to the data of Biyashev and S.I. Dolgov (1948), the moisture capacity of the field does not depend on the size of macroaggregates. Since the density of the soil compound in the arable layer is always disturbed, the moisture capacity of the field changes especially much in this layer. In other horizons, the amount of moisture capacity of the field does not change that much. As a result, data on field moisture capacity seems to be somewhat stabilized. This is important for calculating the rates of irrigation and washing taking into account the drying of dry lands. The main indicator is the amount of DNS.

It should be noted that if the water level is close to the surface of the earth, the moisture content from a certain depth of the vertical profile of the soil can be higher than the amount of DNS. This situation is usually directly on the surface of the water level, and all the channels are filled with water. Water equal to this indicator is called capillary moisture capacity (KNS).

The capillary moisture capacity is close to the full moisture capacity (TNS) of the soil, that is, in the full moisture capacity, almost all of its capillaries are occupied by water, and it is in a 2-phase system.

Although the TNS and KNS indicators of the soil are useful for the plant, it is an indicator of temporary importance and is not influenced by capillary (meniscus) forces with the creation of conditions for the outflow of excess water. the waters immediately flow to the lower layers or to the slope.

Water, which is necessary for the life of plants and is stored in soil layers for a long time in a state that is convenient for assimilation, is the field's wet capacity. By

knowing the DNS, we will be able to know the total moisture storage in the soil and the physiological useful water...

REFERENCES:

1. Iminchayev R.A Jo'rayeva M.M, Ismoilov M.I, Ma'rufjonov J.G' Farg'ona vodiysi sharoitida "Polovchanka" bug'doy navini oziqlanish tartibotining iqtisodiy samaradorligi «Science and innovation»
2. Sotiboldiyeva G, Ma'rufjonov J, Solijonova D, Toshpo'latova Y. Kaliliy o'g'it konlari va uning ahamiyati. "Modern Science and Scientific Studies" 91-93 b
3. Sotiboldieva, G., Abduxakimova, X., Mirzakarimova, I., Xojiboev, B., & Qirgizova, M. (2022). Sug'oriladigan bo'z tuproqlar mintaqasida kalsiyning biogeokimyoviy xususiyatlari. Science and innovation, 1(A7), 121-126.
4. Yuldashev, G., & Sotiboldieva, G. (2015). Formation of the absorbed foundations of the irrigated gray-brown soils of the Sokhsky cone of carrying out. Europaische Fachhochschule, (5), 3-6.
5. Sotiboldieva, G., Abduxakimova, X., Yuldashev, A., & Xasanov, R. (2022). Sug'oriladigan kolmatajlangan bo'z tuproqlarda stronsiyning pedogeokimyosi. Science and innovation, 1(D7), 140-145.
6. Yuldashev, G., & Sotiboldieva, G. (2015). Formation of the absorbed foundations of the irrigated gray-brown soils of the Sokhsky cone of carrying out. Europaische Fachhochschule, (5), 3-6.
7. Юлдашев Ғ, С. Г. (2015). Кольматажланган тупрокларда стронций ва барий. УзМУ хабарлари, 3(2), 138-143.
8. Сотиболдиева, Г., & Абдуллаева, Л. (2020). Сух ва Исфайрамсой дарё ёйилмаларида шаклланган сугориладиган кольматажланган тупрокларнинг галогенетик хусусиятларини тавсифи. Илм-фан ва таълимнинг ривожланиш истикболлари мавзусидаги илмий канфренция туплами. www. openscience. uz, 27, 309-313.
9. Юлдашев, Г., Исагалиев, М., Сотиболдиева, Г., & Турдалиев, А. БИОМИКРОЭЛЕМЕНТЫ В АГРОЛАНДШАФТАХ ЦЕНТРАЛЬНОЙ ФЕРГАНЫ. СЕМИНАР—КРУГЛЫЙ СТОЛ 6. ПРИЁМЫ РЕГУЛИРОВАНИЯ ПОЧВЕННОГО ПЛОДОРОДИЯ И ОХРАНА ПОЧВЕННЫХ РЕСУРСОВ, 409.
10. Toshmirzayeva, G., & Sotiboldiyeva, G. (2021, July). LIGHT GRAY AND TYPICAL GRAY SOILS OF UCHKURGAN DISTRICT. In Конференции.