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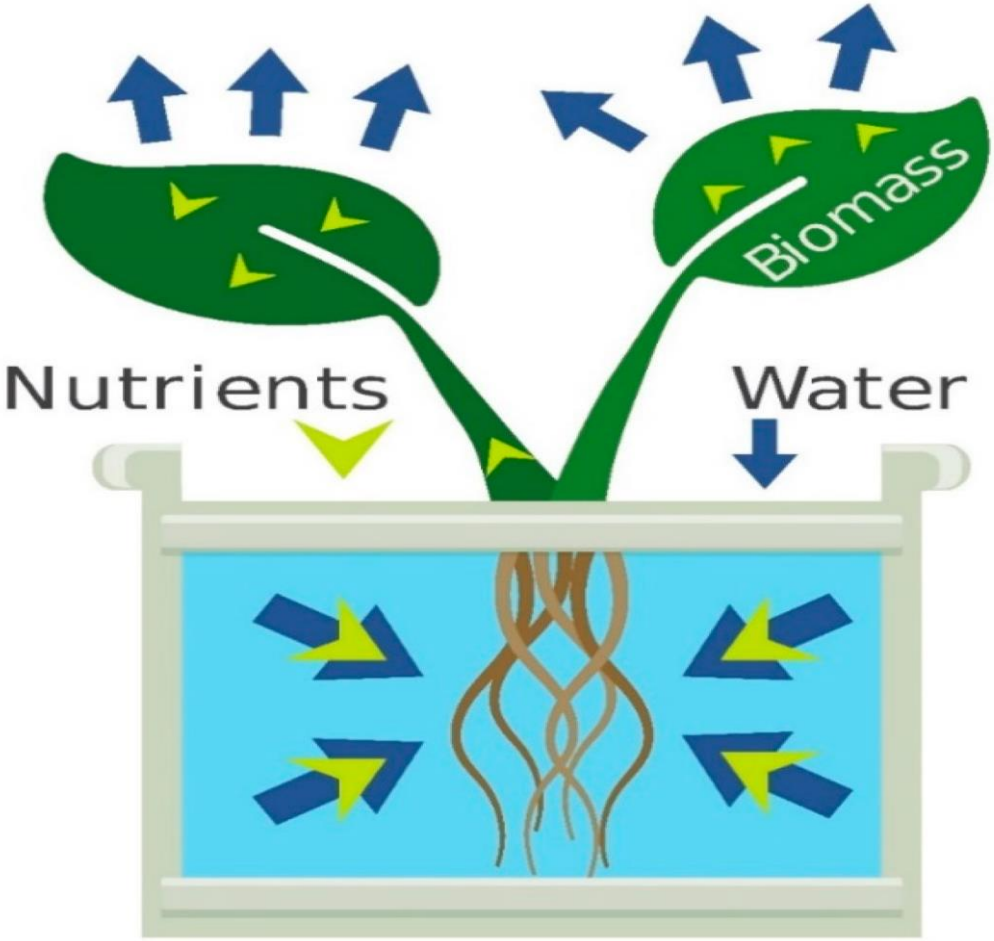


WATER AND NUTRIENT REGIME OF THE SOIL, METHODS OF ITS CONTROL

TUPROQNING SUV VA OZIQ REJIMI, UNI BOSHQARISH USULLARI

Gulistan - 2025

Altmishev O. Water and nutrient regime of the soil, methods of its control (Tuproqning suv va oziq rejimi, uni boshqarish usullari)–**Gulistan, 2025.- 20. p.**

Ushbu ma’ruza matni Dehqonchilik fanidan o‘tiladigan “Tuproqning suv va oziq rejimi, uni boshqarish usullari” mavzusiga bag‘ishlangan bo‘lib, unda tuproq tarkibidagi suv va uning shakllari, o’simliklarning suvga bo’lgan talabi va suv, oziqa moddalar, xususan makroelementlar va mikroelementlarning ekinlar hosildorligini oshirishdagi ahamiyati, tuproqdagi suv va oziqa rejimini yaxshilash bo’yicha bajariladigan agrotexnik ishlar to‘g‘risidagi ma’lumotlar ingliz va o‘zbek tillarida bayon etilgan hamda asosiy atamalar izohi–glossariy keltrilgan. Ma’ruza 2-bosqich Agronomiya (anorchilik) ta’lim yo‘nalishi talabalariga mo‘ljallangan.

Taqrizchilar: **Ingliz adabiyoti kafedrasi mudiri Fazilov A**

Agrotuproqshunoslik va melioratsiya kafedrasi dotsent v.b., q.x.f.n., Toshbekov O‘.

Ma’ruza matni Tabiiy fanlar fakulteti Ilmiy Kengashi qaroriga asosan (26. 05. 2025 yil 10-bayonnoma) nashrga tavsiya qilindi.

WATER AND NUTRIENT REGIME OF THE SOIL, METHODS OF ITS CONTROL.
(TUPROQNING SUV VA OZIQ REJIMI, UNI BOSHQARISH USULLARI)

Tuproqdagi suvning asosiy manbalari

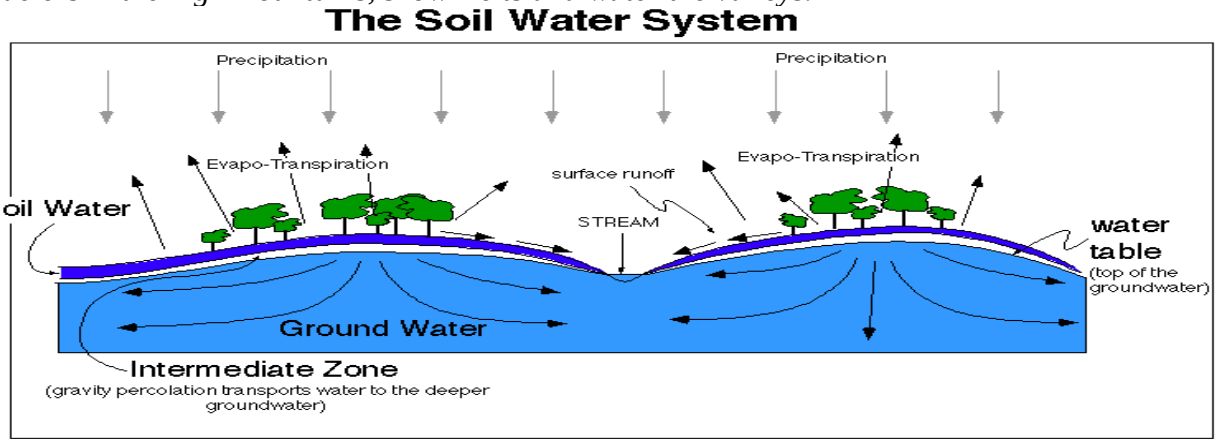
Tuproq namligining asosiy manbalari yog‘inlardir. Atmosferadan tushadigan yog‘in-sochinlar yiliga 500 *mmga* yetadi. Lekin qurg‘oqchil mintaqamizda ular 150 - 350 mm.dan oshmaydi. Masalan, Toshkent viloyatida bir yilda eng ko‘pi bilan 353 *mm*, Mirzacho‘lda 250, Andijonda 180, Farg‘ona, Namangan viloyatlarida 150 — 180 *mm*, Termizda 113, Buxoro, Navoiy viloyatlarida 135 — 150 *mm*, Urganchda 82 — 120 *mm* yog‘in-sochin bo‘ladi. Buni 2/3 qismi kech kuzda, qishda va erta bahorda, hali dehqonchilik uchun kerak bo‘lmagan davrda yog‘adi. Shuning uchun bu yerlarda asosan sug‘orib dehqonchilik qilinadi.

Asosiy suv manbalari - daryolardir. Bular Amudaryo, Sirdaryo, Surxondaryo, Norin, Qoradaryo, Qashqadaryo, Chirchiq, Zarafshon va bir qancha katta-kichik daryolar hisoblanadi. Bu daryolar suvining paydo bo‘lishiga qarab akademik V.I.Shul’s to‘rt tilga: muzlik, qor-muzlik, qorli va qor-yomg‘irli suvlarga bo‘lgan. Hammaga ma’lumki baland tog‘lardagi muzliklar, qorlar erib, vodiylarni suv bilan ta’minlaydi.

The main sources of water in the soil

The main sources of soil moisture are fats. Precipitation from the atmosphere-sochins reach 500 mm per year. But in our arid region they are 150 - 350 mm.does not exceed. For example, in Tashkent region there will be at most 353 mm in one year, in Mirzachol — 250, in Andijan — 180, in Fergana, Namangan regions — 150-180 mm, in Termiz-113, in Bukhara, Navoi regions-135-150 mm, in Urganch-82-120 mm of oil-sochin. 2/3 of it falls in late autumn, winter and early spring, during a period when it is not yet needed for farming. Therefore, these lands are mostly irrigated and farmed.

The main sources of water are rivers. These are the amudarya, Syrdarya, Surkhandarya, Norin, Karadarya, Kashkadarya, Chirchiq, Zarafshan and several large-small rivers. This is academic V, depending on the appearance of river water.I.Shul's was divided into four languages: glacial, snow-glacial, snowy and snow-rainy waters. As everyone knows, glaciers in the high mountains, snow melts and water the valleys.



Bizda suvning doimo sug‘orish davrlarida etishmasligi hisobga olib qor, yomg‘ir suvlarini qishda, kech kuzda va erta bahorda ko‘proq yig‘ib olish uchun suv Chorvoq, Andijon (Kampirravot), Tuyamo‘yin, Karkidon, Tolimarjon, Pachkamar, Chordara, Kattaqo‘rg‘on, Qayroqqum va boshqa bir qancha katta-kichik suv omborlari qurilgan. Yozda asosan shu suv omborlaridagi suvdan foydalaniladi. Bundan tashqari Katta Farg‘ona, Katta Andijon, Shimoliy va Janubiy Farg‘ona, Katta Namangan kanallaridan, Surxondaryo, Qashqadaryo, Buxoro, Xorazm va Qoraqalpog‘istonda qazilgan kanallardan foydalaniladi.

O‘simliklarning suvga bo‘lgan talabini aniqlash tuproqning suv hossalarini yaxshi bilishni, uning suv rejimini to‘g‘ri boshqarishni va suvdan samarali foydalanishni talab qiladi. Tuproq strukturasining buzilishi suv o‘tkazuvchanlikni yomonlashtiradi: agregatlarning buzilishidan hosil bo‘lgan mayda zarrachalar tuproqdagi yirik bo‘shliqlarni to‘ldiradi, shu bilan suvning siljishini qiyinlashtiradi. Bunda tuproq chirindisi katta rol o‘ynaydi, lekin har xil mexanik tarkibli tuproqlar uchun uning ahamiyati bir xil emas. Masalan, fil’trlash xususiyati

yaxshi bo‘lgan qumli tuproqqa organik moddalar solinsa, uning suv o‘tkazuvchanligi kamayadi. Bu chirindining nam sig‘imi yaxshilanganligini, shu bilan u tuproq zarrachalarini birlashtirish xususiyatiga ega ekanligini va ular orasidagi bo‘shliqni to‘ldira olganligini ko‘rsatadi.

Considering that we have a lack of water in the periods of constant irrigation snow, water for more harvesting of rainwater in winter, late autumn and early spring, large-small reservoirs of cattle, Andijan (Camphirravot), Camelback, rhinoceros, Tolimarjan, Pachkamar, Chordara, Cuttack, Kayrokkum and many others have been built. In summer, water from these reservoirs is mainly used. In addition, large Fergana, large Andijan, North and South Fergana, large Namangan channels, dug channels in Surkhandarya, Kashkadarya, Bukhara, Khorezm and Karakalpakstan are used.

Determining the water demand of plants requires a good knowledge of the water hoses of the soil, proper control of its water regime and effective use of water. Violation of the soil structure worsens water permeability: small particles formed from the breakdown of aggregates fill large gaps in the soil, thereby making it difficult for water to shift. Soil humus plays a big role in this, but for soils with different mechanical compositions, its importance is not the same. For example, when organic matter is applied to a sandy soil with good filtration properties, its water permeability is reduced. This indicates that the wet capacity of the humus has improved, thus it has the property of combining soil particles and is able to fill the space between them.

Tuproq namligining yil, mavsum va kun davomida o‘zgarishiga tuproqning suv rejimi deyiladi. Tuproqning suv rejimi muzlagan, yuviladigan, davriy yuviladigan, yuvilmaydigan, terlaydigan va irrigatsion turlarga bo‘linadi.

Bizning mamlakatimiz qurg‘oqchil mintaqada joylashganligi uchun tuproqlarimizning suv rejimi irrigatsion (sun’iy sug‘oriladigai) turga kiradi.

Manbadan tuproqqa kelgan suv miqdori bilan sarflangai suv miqdorining ayirmasi tuproqning suv muvozanati deb ataladi. Tuproqqa keladigan suvlar — yog‘in, sun’iy sug‘orish suvining bir qismi atmosferaga bug‘lanadi, dalaning nishobiga qarab oqib ketadi, sizot suvlar qatlamiga singib, ularga qo‘shiladi va nihoyat o‘simliklar transpiratsiyasiga sarflanadi.

Tuproqning suv hossalari. Tuproq quyidagi suv hossalariga ega bo‘lib, bu hossalar tuproqning suv rejimini belgilaydi:

Tuproqning nam sig‘imi — uning qatlamlarida ma’lum miqdrr suvni to‘tib turish qobiliyatidir.

Tuproqning to‘la nam sig‘imi — uning barcha bo‘shliqlari eng yuqori darajada namlik bilan to‘yinishidir. Tuproqda bu holat kuchli yog‘inlar, sug‘orishlar tufayli qisqa muddat davomida yuzaga keladi.

Dala nam sig‘imi deb — tashqi omillar ta’sirisiz tuproqda eng ko‘p miqdorda va muddatda ushlanib turgan namlikka aytiladi.

S.N.Rijov ma’lumotlariga ko‘ra, mamlakatimiz tuproqlarining dala nam sig‘imi vazniga nisbatan 10 - 27 foiz bo‘lishi mumkin. Tuproqning bu hossasi dehqonchilikda muhim ahamiyatga ega. Chunki o‘simliklarni sug‘orish rejimi shu hossaga qarab belgilanadi.

Ilmiy manbaalarga ko‘ra tuproqning dala nam sig‘imi uning unumdorligi, sizot suvlarining joylashuvi, mexanik tarkibi, tarkibidagi chirindi miqdoriga qarab o‘zgaradi.

The change in soil moisture throughout the Year, season and day is called the water regime of the soil. The water regime of the soil is divided into frozen, washed, periodically washed, non-washed, sweating and irrigated types.

Since our country is located in an arid region, the water regime of our soils is of the irrigatsioi (artificial irrigategai) type.

The subtraction of the amount of Water spent by the amount of water coming from the source to the soil is called the water balance of the soil. The water that comes to the soil-rain, part of the artificial irrigation water evaporates into the atmosphere, flows towards the slope of the field, sizot is absorbed into the layer of water and added to them, and finally spent on plant transpiration.

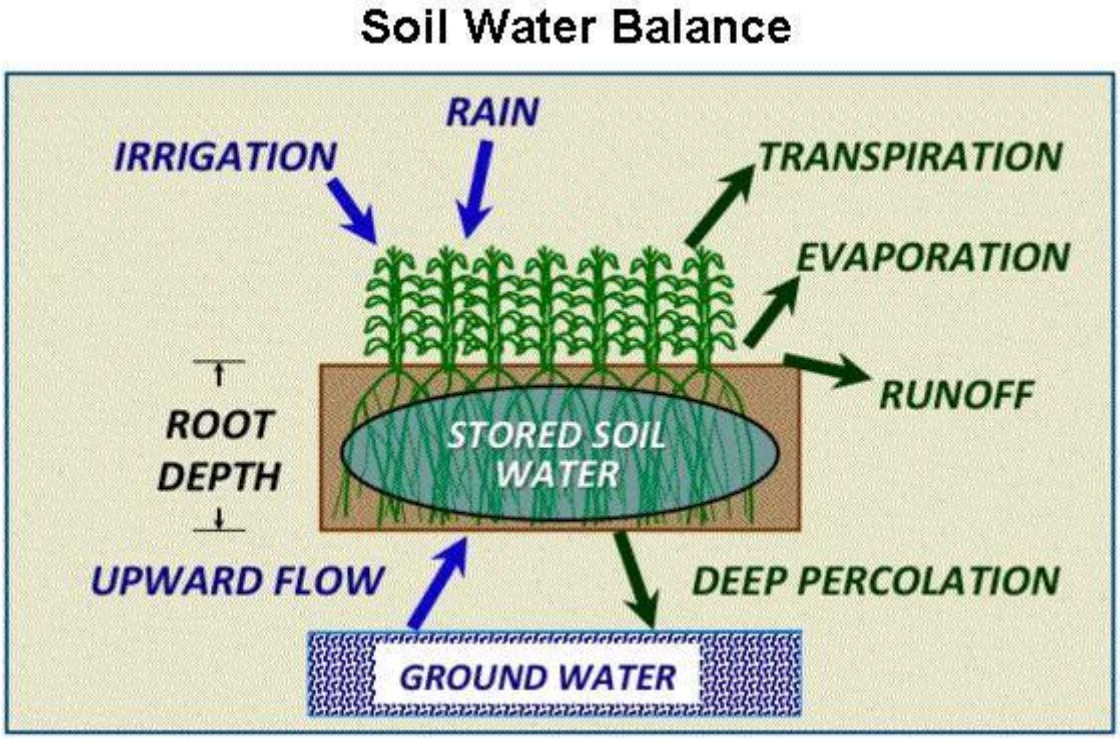
Water hoses of the soil. The soil has the following water hoses, which determine the water regime of the soil:

The wet capacity of the soil is the ability to saturate certain microusal water in its layers.

The full wet capacity of the soil is the saturation of all its cavities with the highest level of moisture.

In the soil, this condition occurs for a short period of time due to strong precipitation, watering. As a field wet capacity-it is said to be the most abundant in the soil without the influence of external factors and the moisture trapped in the process.

S.N.Rijov, the field wet capacity of the soils of our country can be 10 - 27 percent in weight. This Hossa of soil is important in agriculture. Because the regime of watering plants is determined according to this Hossa. According to scientific sources, the field wet capacity of the soil varies depending on its fertility, the location of sizot waters, mechanical composition, the amount of humus it contains.



Tuproqning suv o‘tkazuvchanligi — uning yuqori qatlamlardan quyi qatlamlarga ma’lum tezlikda suvni o‘tkazish xususiyatidir. Qum, qumloq tuproqlar suvni qatlamlar bo‘ylab tez, zich mexanik tarkibli tuproqlar esa sekin o‘tkazadi.

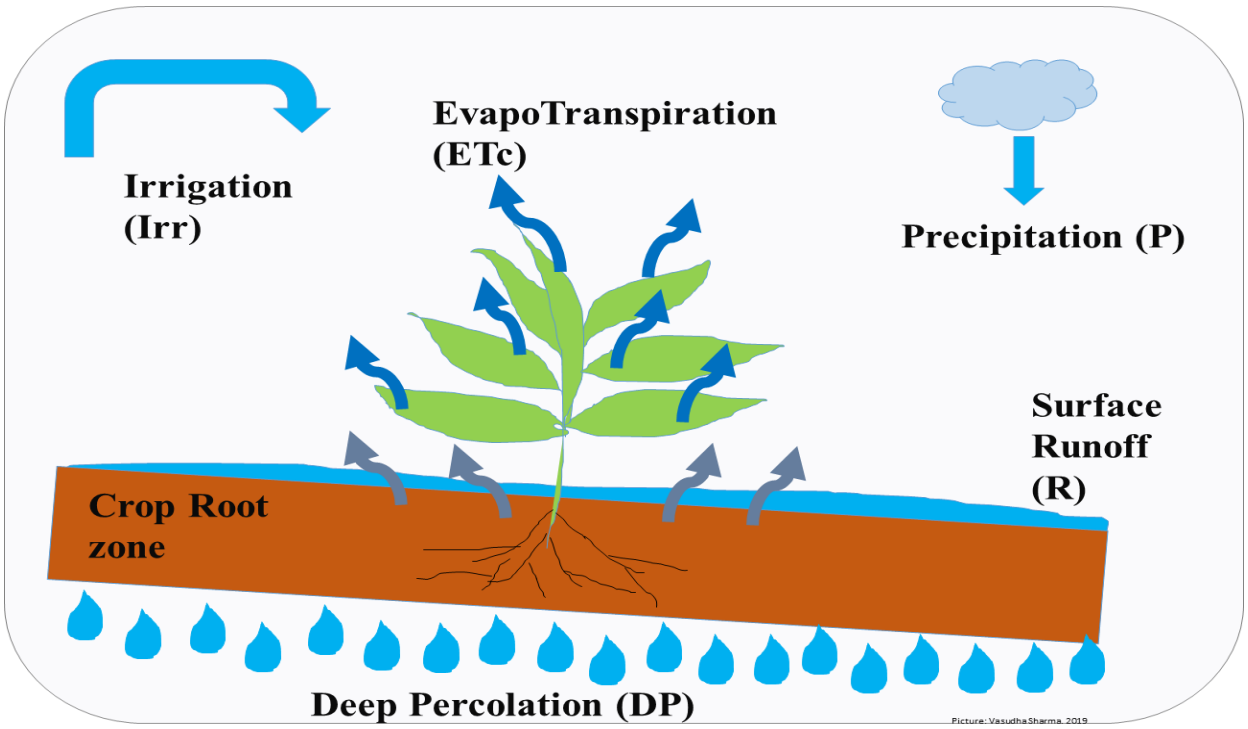
Tuproqniig suv ko‘tarish qobiliyati – deganda tuproqning pastki qatlamlaridan yuqori qatlamlarga suvni ko‘tarishi tushuniladi. G‘ovak tuproqlarda suv yuqoriga sekin, zich tuproqlarda tez ko‘tariladi.

Tuproqning suv bug‘latishi – uning yuzi va qatlamlaridan namlikning atmosferaga chiqib ketishidir. Tuproqning bu hossasi iqlim, tuproqning mexanik tarkibi, donadorligi, dala relefi, o‘simlik qoplami va havoning nisbiy namligiga bog‘liq.

Water permeability of the soil is its property of transferring water from the upper layers to the lower ones at a certain speed. Sandy, loamy soils transfer water along layers quickly, and soils with dense mechanical composition are slow.

Salivary water lifting capacity-is understood to raise water from the lower layers of the soil to the upper layers. In porous soils, water rises up slowly, in dense soils, quickly.

Water evaporation of the soil is the release of moisture from its surface and layers into the atmosphere. This feature of the soil depends on the climate, mechanical composition of the soil, granularity, field relief, plant cover and relative humidity of the air.



Tuproqdagi suv va uning o‘simlik hayotidagi ahamiyati

Ma’lumki, o‘simlikning normal yashashi uchun oziq moddalari bilan birga tuproqda yetarli miqdorda suv ham bo‘lishi kerak. Tuproq namni asosan havodan yog‘adigan yog‘inlar, shuningdek yerosti suvlari (agar bular yer betiga yaqin joylashgan bo‘lsa) dan oladi. Sug‘orib dehqonchilik. qilinadigan yerlarda esa, bulardan tashqari yana sug‘orish orqali ham tuproq qo‘shimcha suv oladi. Tuproqdagi suv turli holatda bo‘lib, ularning hammasidan ham o‘simlik foydalanavermaydi. Tuproq bo‘lakchalari orasidagi bo‘shliqlarda yoki yerning betidagi havoda suv gaz holatida bo‘lishi mumkin. Bu xildagi namga bug‘ (par) shaklidagi suv deb ataladi.

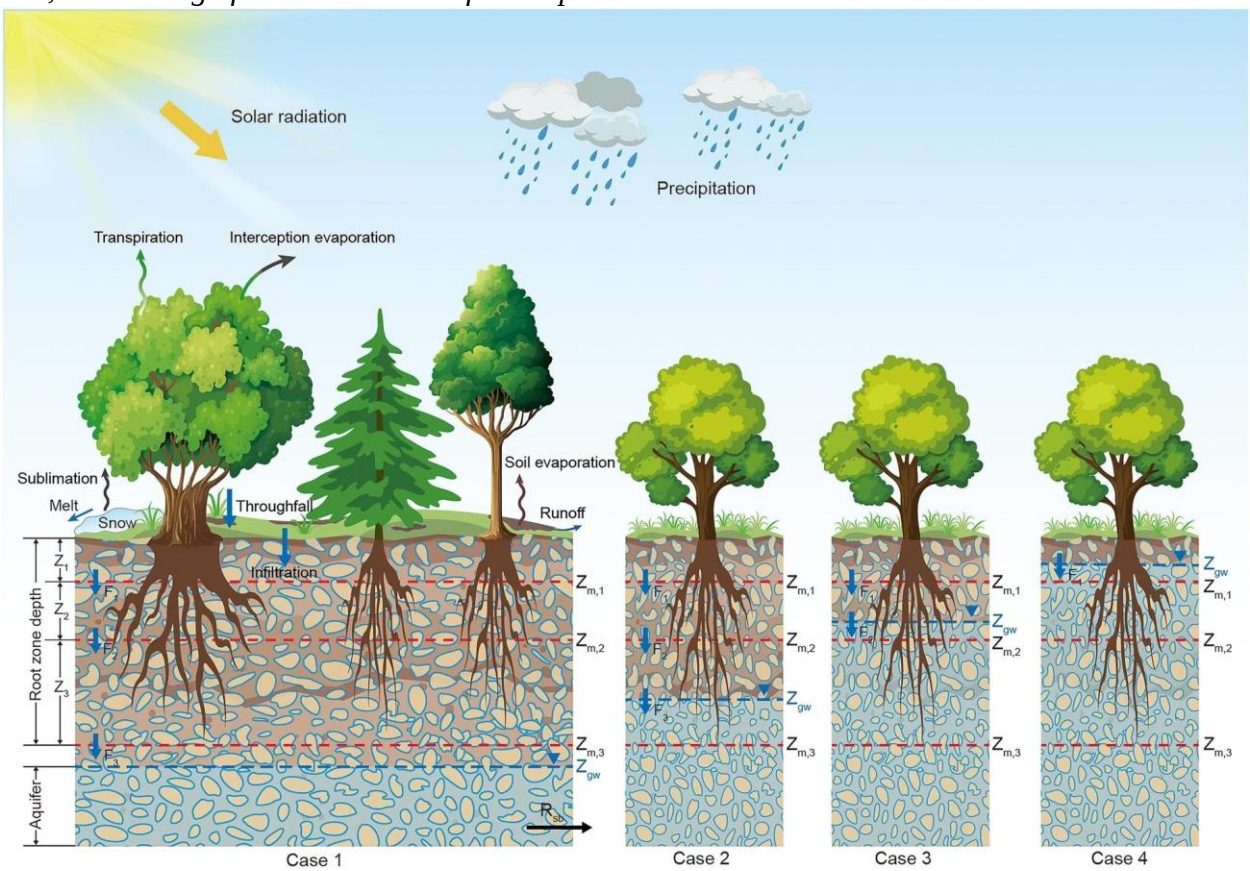
Havoning sovishidan bug‘ suyuq tomchiga aylanadi, buni shudring (shabnam) deb yuritiladi. Shudringdan o‘simlik foydalana oladi. Lekin undan hosil bo‘lgan suv juda oz bo‘ladi, yoki havoning qizishi blan tezda bug‘lanib ketadi. Tashqi ko‘rinishida quruq ko‘ringan har qanday tuproq ma’lum darajada o‘ziga gaz holatidagi suvni singdirib olgan bo‘ladi. Bu xildagi suvga gigroskopik nam deyiladi. Bug‘ shaklidagi va gigroskopik namdan o‘simlik foydalana olmaydi. Shu sababli bunday namlikni o‘simliklar foydalana olmaydigan nam zahirasi deb yuritiladi.

Tuproqlarning o‘simlik foydalana olmaydigan nam zapasi, ularning mexanik tarkibiga qarab har xil bo‘ladi. Masalan, akademik V. R. Vilyamsning ko‘rsatishicha, har 100 kilogramm qumloq tuproqda 2,2 *kg*, xuddi shuncha og‘irlikda olingan qumoq tuproqda—4,7 *kg*, soz tuproqda—8 *kg* va nihoyat o‘sha miqdordagi torfli tuproqda 20 dan 50 *kg* gacha o‘simlik uchun foydasiz nam bor ekanligini ko‘ramiz.

It is known that in order for the plant to live normally, there must be enough water in the soil along with nutrients. The soil receives moisture mainly from precipitation from the air, as well as groundwater (if these are located close to the Earth's bet). Irrigated farming. in the lands to be made, in addition to these, the soil receives additional water through irrigation. The water in the soil is in different states, not all of which are used by the plant. Water can be in the gaseous state in the gaps between the soil fragments or in the air in the Earth's bet. This is called water in the form of steam (par) to the moisture in the hill.

From the cooling of the air, steam becomes a liquid drop, which is referred to as dew (dew). Dew can be used by the plant. But the water formed from it will be very little, or the heating of the air will quickly evaporate the Blanc. Any soil that looks dry in appearance will to some extent have absorbed water in its gaseous state. Water in this variety is called hygroscopic wet. Steam-shaped and hygroscopic moisture cannot be used by the plant. For this reason, such

moisture is referred to as a wet reserve that plants cannot use. The moist zap of soils that the plant cannot use will be different depending on their mechanical composition. For example, academic V. R. Williams shows that every 100 kilograms of loamy soil contains 2.2 kg, in loamy soil taken at the same weight—4.7 kg, in loamy soil—8 kg, and finally in that amount of peat soil, 20 to 50 kg of useless moisture for the plant.



Agar tuproqdagi suv zapasi o‘simlik foydalana olmaydigan namlik darajasiga tushib qolsa, unda o‘simlik so‘lishi, hatto qurib qolishi ham mumkin. Odatda bu namlikni o‘simlikning so‘lish koefitsienti deb yuritiladi.

Har bir tuproq xili uchun xos bo‘lgan so‘lish koefitsientini bilish o‘sha tuproqdagi o‘simlik foydalanaoladigan suv miqdorini aniqlashda yordam beradi.

Masalan, kolxozning biror dalasini tashkil qilgan qumloq tuproqning namligi 14% bo‘lsin. Bundan o‘simlik foydalana olmaydigan nam zaxirasini (bu nam zapasi, yuqorida ko‘rganimizdek 100 kilogramm tuproqda 2,2 *km* ga teng edi) olib tashlasak, shu tuproqdagi o‘simlik uchun foydali suv miqdori 11,8 protsent ekanligini bilamiz. Yoki ikkinchi bir boshqa daladagi, masalan, qumoq tuproqli yerning namligini ham 14 protsent deb faraz qilaylik. Agar undan (14% dan) o‘simlik foydalana olmaydigan suv zapasini (bu tuproqlar uchun 4,7% edi) chiqarib tashlasak, u tuproqdagi foydali nam 9,3 protsentga baravar bo‘ladi.

Tuproq kapilyarlarida harakat qiladigan suv xiliga kapilyar nam deyiladi. Tuproqdagi bu namni o‘simliklar ildizi orqali osonlik bilan so‘rib oladi. Bu o‘simlik uchun foydali namning asosiy manbaidir.

Qor yoki yomg‘ir yoqqanida, yoki sug‘orishda beriladigan suvni tuproq o‘ziga yirik bo‘shliqlar va kapilyarlar orqali yaxshi singdirib oladi. Kapilyarlar to‘lganidan keyin ortib qolgan suv tuproqlardagi boshqa bo‘shliqlarni to‘ldiradi va pastga sizib o‘tadi. Bu erigan holdagi suvdan ham o‘simlik bemalol foydalanadi. Agar tuproq o‘zida kapilyarlarga ega bo‘lmasa edi, u o‘simliklarga kerakli suvni saqlab tura olmagan bo‘lardi.

Aksincha, tuproqda kapilyarlardan tashqari yana boshqa bo‘shliqlar bo‘lmaganda ham, tuproqning yuqori qavatidan pastki qavatiga suvning o‘tishi deyarli mumkin bo‘lmas edi. Chunki kapilyarlardagi suv ko‘pincha pastdan yuqoriga qarab harakat qiladi.

Binobarin, o‘simliklarning suv blan normal ta’minlanishi uchun tuproqning kapilyarlari blan kapilyarlar bo‘lmagan bo‘shliqlar ham bo‘lishi zarur. Bunday holatni faqat strukturali tuproqlardagina uchratish mumkin.

If the water zap in the soil falls to a level of moisture that the plant cannot use, then the plant can wilt, even wither. Usually this moisture is referred to as the wilting coeficient of the plant.

Knowing the solubility coeficent, which is typical for each type of soil, can help determine the amount of water that a plant in that soil can use.

For example, let the moisture content of the loamy soil, which made up some field of the collective farm, be 14%. We know that the amount of water useful for a plant in the same soil is 11.8 procents, if we remove from this a moist reserve that the plant cannot use (this moist Zapa, as we saw above, was equal to 2.2 km in 100 kilograms of soil). Or let's assume that the moisture content of the Earth in the second one other field, for example, loamy soil, is also 14 protsent. If we exclude from it (from 14%) water Zapa, which the plant cannot use (this was 4.7% for soils), it will be about 9.3 times the useful moisture in the soil.

Water chilli acting on soil capillaries are called capillary wet. This moisture in the soil is easily absorbed through the roots of plants. This is the main source of moisture useful for the plant.

When snow or rain is on, or when watering, the water supplied is well absorbed by the soil itself through large cavities and capillaries. The water that grows after the capillaries are full fills other gaps in the soils and leaks down. This melt water is also freely used by the plant. If the soil did not have capillaries on its own, it would not have been able to maintain the water needed by the plants.

On the contrary, it would be almost impossible for water to flow from the top floor to the bottom floor, even if there were no other gaps in the soil other than capillaries. Because the water in the capillaries often moves from bottom to top.

Consequently, for the normal supply of water Blanc in plants, it is necessary that the capillaries of the soil also be voids without Blanc capillaries. This condition can only be found on structured soils.

Tuproqning suvga bog‘liq hossalari

Dehqonchilikda tuproqning suvga bog‘liq hossalaridan quyidagilar katta ahamiyatga ega:

1) tuproqning suv o‘tkazuvchanligi, 2) suv singdiruvchanligi, 3) suvni pastdan yuqoriga ko‘tariluvchanligi va 4) suvni bug‘latish qobiliyati.

Tuproqning suv o‘tkazuchanligi deb, uning suvni yuqoridan pastga o‘tkazishiga aytiladi.

Tuproqning bu hossasi uning mexanik tarkibiga, struktura holatiga, qatlamning zichlik darajasiga va tuproqdagi organik moddaning oz ko‘pligiga bog‘liq bo‘ladi.

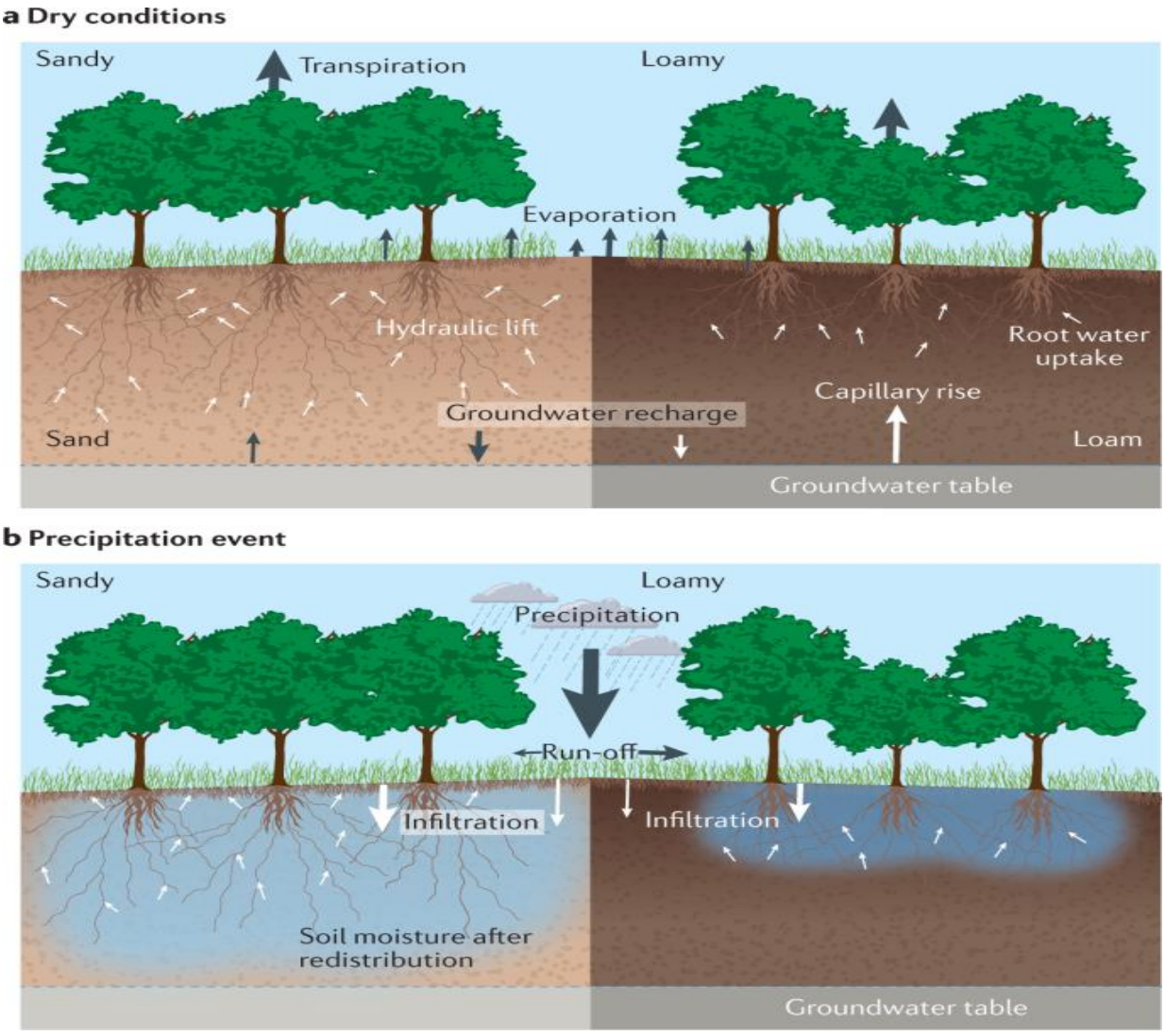
Og‘ir tuproqlarga qaraganda yengil tuproqlar suvni tez o‘tkazadi. Masalan, o‘tkazgan tajribalar shuni ko‘rsatadiki, bir gektar yerda 700—800 kubometr suvni yengil tuproqda singdirish uchun 8—10 soat vaqt ketsa, og‘ir tuproqlarda bu miqdordagi suvning singishiga 1 — 2 kun kerak bo‘ladi.

Mexanik tarkibi bir xil bo‘lgan yerlarda esa, strukturali tuproq suvni tez o‘tkazib, aksincha, strukturasi yo‘qolgan tuproqlar sekin o‘tkazadi. Masalan, professor S. N. Rijov ma’lumoti bo‘yicha mexanik tarkibi bir xil bo‘lib, strukturali holati turlicha bo‘lgan almashlab ekish dalalaridagi tuproqlarning suv o‘tkazuchanligi quyidagicha bo‘lganini ko‘ramiz.

Uch yillik bedapoya buzilib birinchi yil g‘o‘za ekilgan dalada bir gektar yerga 405 kubometr suv singgan (bir soatda).

Ikki yillik bedapoya buzilib birinchi yil g‘o‘za ekilgan dalada 245 kubometr suv singgan.

Eskidan g‘o‘za ekilib kelgan dalada 135 kubometr suv singgan.



Water-dependent soil

Feature of the water-dependent feature of the soil in agriculture, the following are of great importance: 1) water permeability of the soil, 2) water absorption, 3) Water bottom-to-top permeability, and 4) the ability to evaporate water. It is said that the soil is permeable to water from top to bottom.

This feature of the soil will depend on its mechanical composition, the state of the structure, the degree of density of the layer and a small amount of organic matter in the soil. Lighter soils than heavy ones tend to transfer water quickly. For example, experiments have shown that it takes 8-10 hours to absorb 700-800 cubic meters of water in a hectare of land in light soil, while in heavy soils it takes 1-2 days to absorb this amount of water. In areas with uniform mechanical composition, however, the structured soil passes water quickly, and instead soils with Lost structure pass slowly.

For example, professor S.N.Rijov data, the mechanical composition is the same, and we see that the water permeability of soils in alternating planting fields with different structural conditions is as follows. In the first year of the three-year decay of alfalfa stalk, 405 cubic meters of water were absorbed into one hectare of land in a field planted with acorns (in an hour). In the first year of the two-year decay of bedapoya, 245 cubic meters of water were absorbed in the field where acorns were planted. 135 cubic meters of water were absorbed in the field where acorns were planted from the old one.

Strukturali tuproqlar suvni eng ko‘p singdirishi bilan birga uni uzoqroq ushlab turadi hamda ancha tejab sarf qiladi. Chunki bu tuproqlarda suvni struktura bo‘lakchalar o‘ziga shimib olib, tezda bug‘lanib ketishiga yo‘l qo‘ymaydi. Demak, tuproqdagi suv o‘simlikka kerak

bo‘lgandagina sarf bo‘ladi. Chirindisi ko‘p tuproqlarda ham suvning ko‘p singib uzoq saqlanib turishini harbir kolxozchi yaxshi biladi.

Dehqonchilikda tuproqning suv singdiruvchanligini aniqlash, ayniqsa, sug‘orish normalarini belgilash uchun juda ham zarurdir.

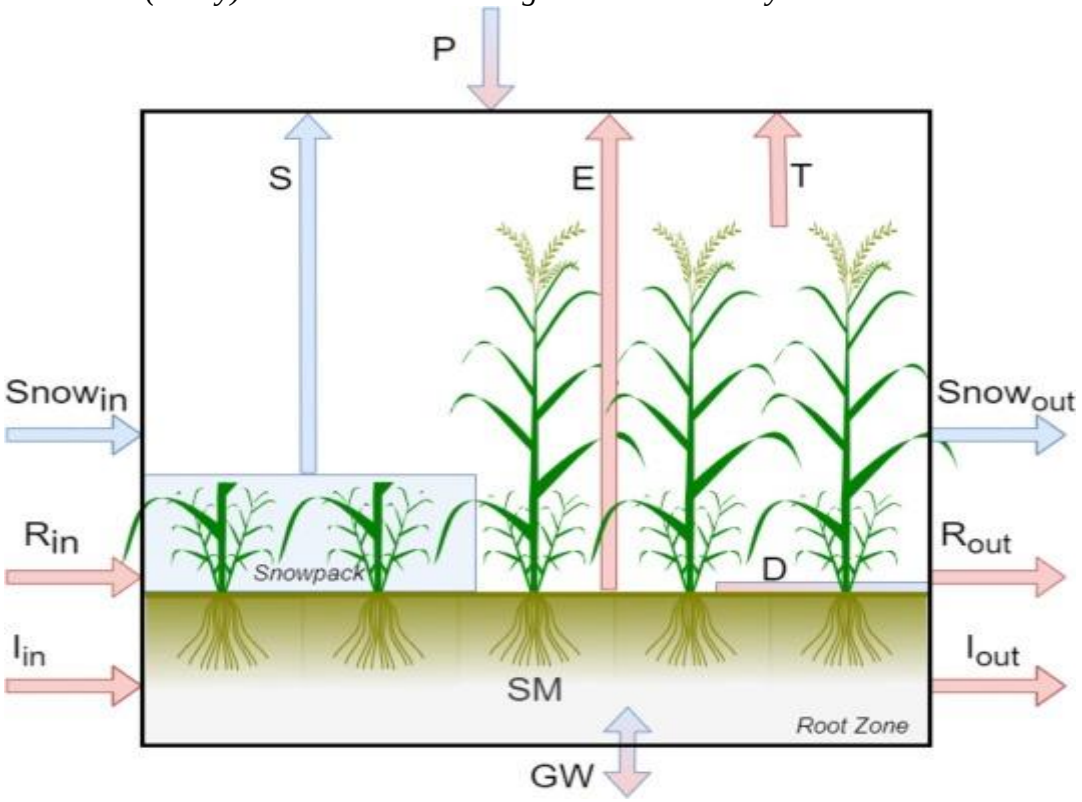
Ekinlarni sug‘orish normalari tuproqning singdiruchanligiga qarab belgilanadi. Juda ko‘p o‘tkazilgan tajribalar shuni ko‘rsatadiki, tuproqning namlik darajasi (agar u yer sho‘rlanmagan bo‘lsa) uning suv sig‘diruvchanliligiga nisbatan 65—70% bo‘lganda ekinlarni (g‘o‘zani) sug‘orish maqsadga muvofiq hisoblanadi.

Agar tuproqdagi namlik yuqorida ko‘rsatilgan namlikdan kamroqqa tushirib sug‘orilsa, o‘simlik (g‘o‘za) so‘lishi mumkim.

Tuproqning suv sig‘diruvchanligi uning og‘irligiga nisbatan protsent hisobida ko‘rsatiladi. Masalan, O‘zbekistonning sug‘oriladigan yerlarida bir metr qalinlikdagi tuproq qatlamining o‘rtacha suv sig‘diruvchanligi quyidagichadir:

soz (og‘ir) tuproqlarda 25—26%
qumoq 19—20%
qumloq 13—15%
qumli 10—11%

Structural soils, while absorbing water the most, keep it longer and save a lot. Because in these soils, the water structure absorbs the lumps and prevents them from evaporating quickly. So water in the soil will only be spent if the plant needs it. Even on many soils, humus is well known to the military collective farmer that a lot of water is absorbed and stored for a long time. In agriculture, determining the water absorption of the soil is especially necessary to determine the norms of irrigation. The norms for watering crops are determined depending on the absorbency of the soil. Very much conducted experiments show that it is advisable to water crops (Acorns) when the moisture level of the soil (if the soil is not saline) is 65-70% relative to its water capacity. If the moisture in the soil is lowered and watered less than the moisture indicated above, it is possible for the plant (Acorn) to wilt. The water capacity of the soil is indicated in the procent calculation with respect to its weight. For example, in the irrigated lands of Uzbekistan, the average water capacity of a one-meter-thick layer of soil is as follows: 25-26 on shallow (heavy) soils% sand 19-20% gravel 13-15% dirty 10-11%.



Demak, turli yerlarda tuproqning suvni singdiruvchanlik xususiyati tuproqning mexanik tarkibiga qarab suv singdiruvchanlik miqdori har xil bo‘lar ekan.

Tuproqning suvni pastdan yuqoriga ko‘taruvchanligi, ya’ni tuproqning quyi qatlamlaridagi suvni yuqori qavatlarga ko‘tarib berish qobiliyati o‘simliklar hayotida katta ahamiyatga egadir.

Shu boisdan tuproqdagi suv pastdan yuqoriga qarab faqat kapilyarlar orqali harakat qiladi. Tuproqning bu hossasi asosan uning mexanik tarkibiga bog‘liq bo‘ladi. Buni quyidagi jadvalda ko‘rish mumkin.

This means that the water absorption property of the soil in different lands would be different in the amount of water absorption depending on the mechanical composition of the soil.

The ability of the soil to raise water from bottom to top, that is, the water in the lower layers of the soil, up to the upper floors, is of great importance in the life of plants.

Therefore, water in the soil moves from bottom to Top only through capillaries. This feature of the soil will largely depend on its mechanical composition. This can be seen in the table below.

Table 1.

In two different soils, the bottom-up of the water (sm. on account)

The name of the soil	*from 1 hour*	*from 6 hour*	*then from 1 day*	*then 6 days*	*after 26 days*
Sandy soil	20	31	35	41	41
Smooth soil	5	23	33	51	78

Soz tuproqda (tajribaning dastlabki davrida) suv sekinlik bilan ko‘tarilgan. Ammo tajriba oxiriga borib, unda suvning ko‘tarilish balandligi eng yuqori bo‘lgan.

Qumli tuproqda esa, birinchi soatlarda suv tezlik bilan: ko‘tarilgan bo‘lsada, ammo 6 sutkadan so‘ng uning ko‘tarilishi butunlay to‘xtagan. SHunday qilib, og‘ir tuproqlar suvni juda ham baland ko‘tarib berish qobiliyatiga ega bo‘lar ekan. Aksincha, qumloq yoki qumli tuproqlar esa suvni uncha baland ko‘taraolmas ekan.

Shu sababli qum yoki shag‘al qatlamlar ustida joylashgan tuproq qavati, garchi bu tuproqlarda yerosti suvlari yer betiga yaqin turganida ham tez qurib qolishini ko‘rish mumkin.

Tuproqdagi kapillyarlar bo‘yicha pastdan yuqoriga ko‘tarilayotgan suv, agar u o‘simlik ildizlari va ildizchalarga o‘tmasa, yerning betigacha chiqishi hamda befoyda havoga uchib ketishi mumkin. Bu hodisa ayniqsa strukturasiz, zichlangan, og‘ir tuproqlarda bo‘ladi. Shuning uchun tuproqlardagi namini saqlab qolish maqsadida sug‘organdan so‘ng tuproq betini yumshatish eng muhim agrotexnika tadbirlaridan biri hisoblanadi.

Tuproqning suvni pastdan yuqoriga ko‘tarish hossasi (ayniqsa sug‘orib dehqonchilik qilinadigan rayonlarda) tuproqlarning sho‘rlanishiga katta ta’sir ko‘rsatadi.

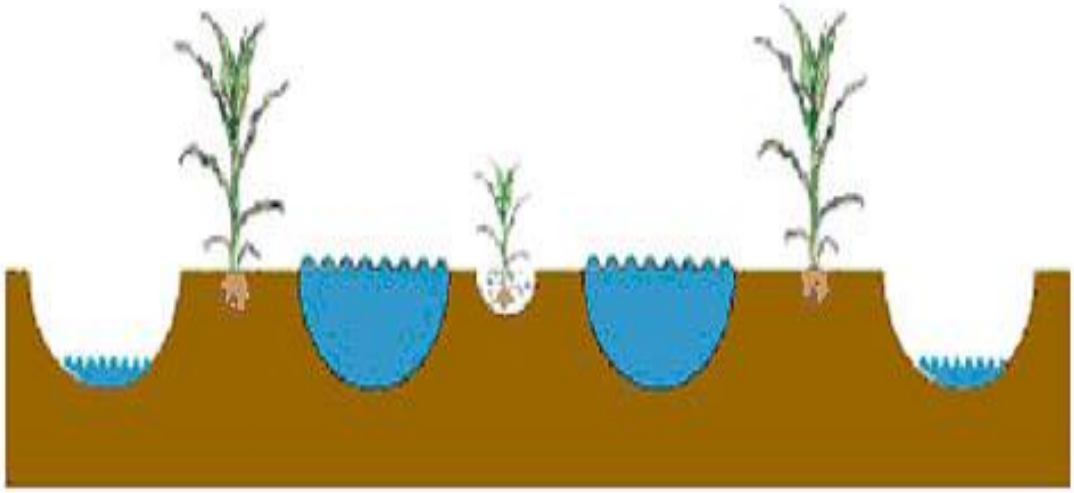
In shallow soil (early in the experiment), the water rose slowly. But by the end of the experiment, the height of the rise of water in it was the highest.

On the sandy soil, however, in the first hours, the water was at a speed of: although it was raised, but after 6 days its rise completely stopped. Thus, it turns out that heavy soils have the ability to raise water much higher. In contrast, loamy or sandy soils do not raise the water much higher.

For this reason, the soil floor above the sand or gravel layers, although in these soils it can be seen that the groundwater dries up quickly even when it stands close to the Earth's bet.

Bottom-to-top water from the capillaries in the soil can escape as far as the Earth's Bethesda and fly into the useless air if it does not move to the plant roots and roots. This phenomenon occurs especially on unstructured, compacted, heavy soils. Therefore, loosening soil concrete after watering in order to maintain moisture in the soils is one of the most important agrotechnical measures.

Bottom-up feature (especially in irrigated-farmed raions) has a major effect on salinity of soils.



Tuproqdagi tuzlarning manbai, asosan, yer ostidagi shoʻrlangan sizot suvlardir. Kapillyarlar orqali koʻtarilgan yerosti shoʻr suvlarni tuproqning betiga chiqqanidan soʻng bugʻlanib, suvdagi tuzlar tuproqning ustida yoki betiga yaqin qavatda toʻplanadi. Agar bu hodisaga qarshi chora koʻrilmasa, tuproq tezda shoʻrlanib qolishi mumkin, amaliyotda bu hodisa ayniqsa ogʻir soz tuproqlarda kuchli boʻlishi kuzatiladi.

Tuproqning suvni bugʻlatish qobiliyati deb, tuproq oʻzida boʻlgan namni tez yoki sekinlik bilan yoʻqotishiga aytiladi.

Tuproqdagi namning bugʻlanishiga ob-havo sharoiti (havo harorati, havoning namligi, shamolning kuchli yoki kuchsiz esishi), joyning tuzilishi (yerning kungay yoki kunga teskari joylanishi), shuningdek tuproqning birqancha xususiyatlari (struktura holati, mexanik tarkibi, rangi, namligi va boshqalar) ta'sir koʻrsatadi.

Strukturasiz, chirindisi kam, koʻp zichlangan ogʻir tuproqlarda namni juda tezlik bilan yoʻqolishini koʻramiz. Agar bu tuproqlarda sugʻorgandan keyin tuproqning yetilishi bilan kul'tivatsiya yoki chopiq oʻtkazilmasa, undagi nam 3—4 kundayoq havoga bugʻlanib ketadi. Shuning uchun sugʻorgandan keyin tuproq yetilishi bilan kul'tivatsiya oʻtkazish eng zarur agrotexnik tadbir hisoblanadi.

Tuproqdagi suvning koʻproq bugʻlanishiga yer betining tekis boʻlmasligi ham kuchli ta'sir koʻrsatadi. Oʻsimlik bilan band boʻlgan yerga qaraganda usti yalangʻoch, oʻsimliksiz ochiq yerlar namni tez yoʻqotadi.

Shu sababli oʻsimliklar uchun zarur boʻlgan nam zaxirasini tuproqda mumkin qadar koʻproq va uzoqroq saqlab qolishda yuqoridagilarni e'tiborga olib ish koʻrish lozim boʻladi.

The source of salts in the soil is mainly saline sizot waters underground. The ground raised by capillaries evaporates the salt water after it comes out of the soil's bet, and the salts in the water accumulate above the soil or on the floor close to the bet. If no action is taken against this phenomenon, the soil can quickly become saline, in practice it is observed that this phenomenon is especially strong on heavy soils.

It is said that the soil has the ability to evaporate water so that the soil loses the moisture it contains quickly or slowly.

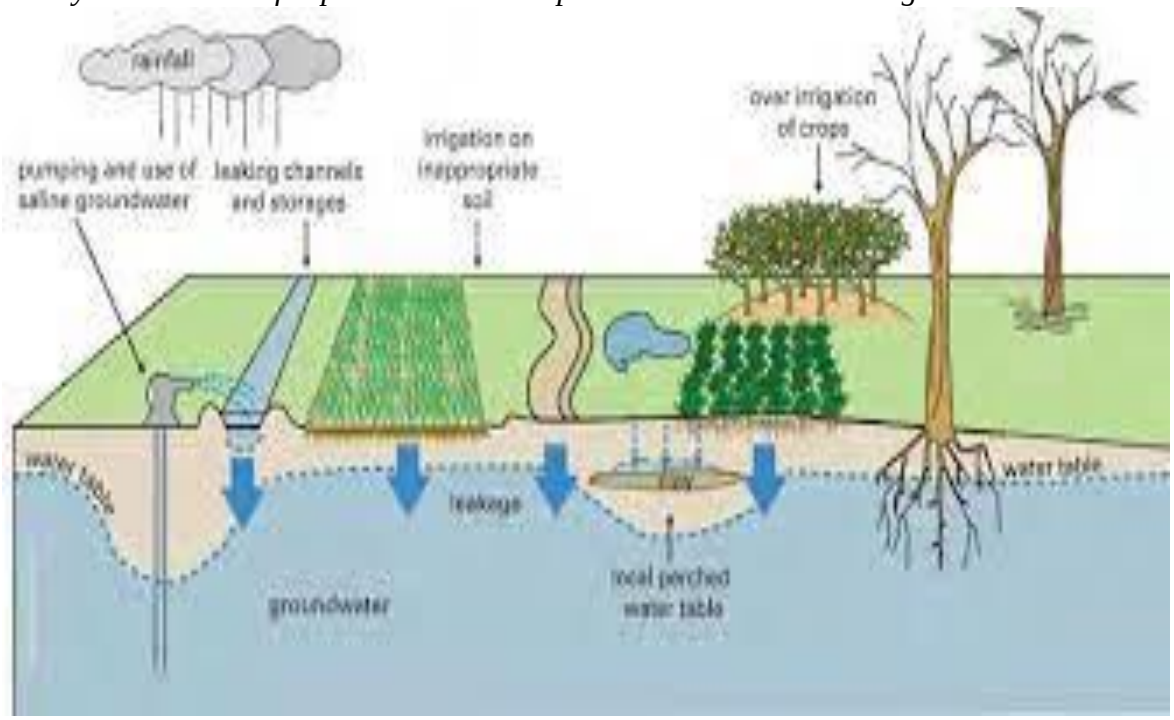
Evaporation of moisture in the soil is influenced by weather conditions (air temperature, air humidity, strong or weak blowing of the wind), the structure of the place (the reverse location of the Earth on a day or day), as well as the back properties of the soil (structure condition, mechanical composition, color, humidity, etc.).

Without structure, we see that moisture is lost very quickly on heavy soils with little humus, much compacted. If with the maturation of the soil after watering on these soils, no cultivation or chop is carried out, the moisture in it evaporates into the air at the age of 3-4

days. Therefore, it is the most necessary agrotechnical event to carry out cultivation with the maturation of the soil after watering.

The greater evaporation of water in the soil is also strongly influenced by the uneven nature of the Earth's bet. Bare above than vegetation-occupied land, open land without vegetation loses moisture rapidly.

Therefore, it will be necessary to take into account the above in maintaining the necessary moist reserve for plants as much as possible in the soil and longer.



O‘simliklarni sug‘orish rejimi

O‘simliklarni sug‘orish rejimi deb ularni zarur vaqt mobaynida va kerakli miqdorda uni tuproq namligi bilan ta’minlashga aytiladi. S.N.Rijov ta’kidlashicha, ko‘pchilik madaniy o‘simliklarni sug‘orish rejimi dala nam sig‘imiga nisbatan tuproq namligi 60-70 foiz bo‘lishi mumkin. Xususan, g‘o‘zaning sug‘orish rejimi yoki bu o‘simlik uchun tuproq namligining eng quyi chegarasi dala nam sig‘imiga nisbatan 70 foizdir.

Tuproq namligi yuqoridagilardan past darajada bo‘lsa, suv o‘simlikka yaxshi o‘tmaydi, hatto butunlay o‘tmay, singdirmay qo‘yadi. Bunday holat o‘simlikni so‘lish namligi deyiladi. Demak, o‘simliklarni tuproqdagi mavjud namlikni aslo so‘lish namligi darajasiga tushirmay sug‘orish kerak.

Ko‘pchilik hollarda agar tuproqda nam yetarli bo‘lmasa, ekinzorni begona o‘tlar bosib ketadi, chunki ularning ildiz tizimi tuproqning chuqur qatlamlarida rivojlangan bo‘ladi. Bu esa ekinlar o‘sishi va rivojiga salbiy ta’sir etadi. Tuproqda namlikning kamayishi mikroorganizmlar faoliyatiga ham salbiy ta’sir etadi, quruq tuproqda biologik jarayonlar so‘nib, organik moddalarning parchalanishi to‘xtab qoladi. Tuproq nami uning to‘la namlik sig‘imiga nisbatan 60% bo‘lganda, mikroorganizmlarning rivojlanishi uchun qulay sharoit yaratiladi. Tuproqning suv rejimini o‘rganish va boshqarish madaniy ekinlardan yuqori va sifatli hosil olishda alohida ahamiyatga ega.

Plant irrigation regime

The regime of watering plants is said to provide them with soil moisture for the required time and the required amount of time. S.N.Rijov notes that the regime of irrigation of most cultivated plants can be 60-70 percent of the soil moisture compared to the field wet capacity. In particular, the irrigation regime of the acorn, or the lowest limit of soil moisture for this plant, is 70 percent compared to the wet capacity of the field.

When the soil moisture is at a lower level than the above, the water does not pass well into the plant, even completely failing, leaving it impregnated. This condition is called wilting moisture of the plant. This means that the plants should be watered without lowering the existing moisture in the soil to the level of wilting moisture at all. In most cases, if there is not enough moisture in the soil, the crop will be overrun by weeds, since their root system will have developed in the deeper layers of the soil. This negatively affects the growth and development of crops.

The decrease in moisture in the soil also negatively affects the activity of microorganisms, in dry soil biological processes fade, and the decomposition of organic matter stops. When soil moisture is 60% compared to its full moisture capacity, favorable conditions are created for the development of microorganisms. The study and management of the water regime of the soil is of particular importance in obtaining a high and high-quality harvest from cultural crops.

O‘simliklarning suvga talabi.

Dehqonchilikda ekiladigan barcha madaniy ekinlar o‘sish, rivojlanish uchun ma’lum suv sarflaydi. Ekinlarnnig suvga talabi deganda o‘simliklarniig ildiz tizimi orqali tuproqdagi suvni «shimib olib, barglari orqali atmosferaga bug‘latishi yoki transpiratsiya hodisasi tushuniladi.

O‘simliklar quruq modda hosil qilish uchun sarflagan suv miqdori – transpiratsiya koeffitsiyenti deyiladi.

Yetishtirilayotgan o‘simliklar navi, biologik xususiyatlari turli-tumandir, shuning uchun o‘simliklarni transpiratsiya koeffitsieiti juda o‘zgaruvchan. U ekin turiga, iqlim sharoitga, yog‘in miqdori, havo harorati, tuproq eritmasiga konsentratsiyasi, shamol va ekin naviga qarab o‘zgaradi. K. A. Timiryazevning ta’kidlashicha, kuchli shamolda o‘simliklarning transpiratsiya koeffitsiyenti 20 martagacha ortishi mumkin.

N.M.Tulikov ma’lumotlariga ko‘ra, arpaning transpiratsiya koeffitsiyenti havoning nisbiy namligi kam bo‘lganda 618 bo‘lsa, nisbiy namlik ortganda 288 ni tashkil etadi**.**

Water demand of plants.

All cultivated crops planted in agriculture use certain water for growth, development. Cultivarnig water demand refers to the phenomenon of plants being able to "absorb" water in the soil through the niig root system and evaporate it into the atmosphere through its leaves or transpiration. The amount of water that plants spend to produce dry matter is called the transpiration coefficient. The variety of cultivated plants, biological characteristics are diverse, so the transpiration quotient of plants is very variable. It varies depending on Crop Type, climatic conditions, oil content, air temperature, concentration in soil solution, wind and crop variety. K. A. Timiryazev noted that in strong winds, the transpiration coefficient of plants can increase up to 20 times.

N.M.Tulikov, the transpiration coefficient of barley is 618 when the relative humidity of the air is low, and 288 when the relative humidity is increased.

Table 2

Variation of transpiration coefficient according to plant species

Crops	Transpiration coefficient
Cotton	280-640
Corn	233-386
White sorghum	237-437
Kanop	450-700
Alfalfa	446-1068
Rice	250-811
Sugar beet	267-397
Potatoes	167-636
wheat	231-557
barley	253-774

Oats	332-766

O‘simliklarning suvga talabi tuproq turi, iqlim, ekin navlariga biologik xususiyatlariga, o‘simlikning rivojlanish bosqichlariga, amal davri davomiyligiga, tuproq unumdorligi hamda qo‘llaniladigan parvarish agrotexnikasiga ham bog‘liq. Shuningdek, transpiratsiya koeffitsiyentiga, o‘simlik ildizining rivojlanish darajasi ham o‘ziga hos ta’sir ko‘rsatadi.

Xususan, kuchli ildiz tizimiga ega bo‘lgan beda o‘simligining transpiratsiya koeffitsiyenti 446-1100 bo‘lsa, popuk ildizli bug‘doyniki 231-557 ekanligi buning yaqqol dalilidir.

Mamlakatimiz dehqonchiligidagi asosiy e’tibor, muhim ekinlardan biri - g‘o‘zaning suvga bo‘lgan talabiga qaratilgan.

Masalan, g‘o‘zaning suvga bo‘lgan talabi, uning tabiatiga ko‘ra. amal davrida hamda hosilning paydo bo‘lish jarayonida aniq chegaralangan emas. Bu jarayonlar bir-biriga o‘xshash va o‘zaro bog‘liq holda o‘tadi. G‘o‘zaning butun o‘suv davri suvga bo‘lgan talabiga qarab 3 davrga bo‘linadi:

birinchi davr - ekishdan, to gullashigacha bo‘lgan davr;
ikkinchi davr — gullash - meva tugish davri;
uchinchi davr - hosilning pishib etilishi davri.

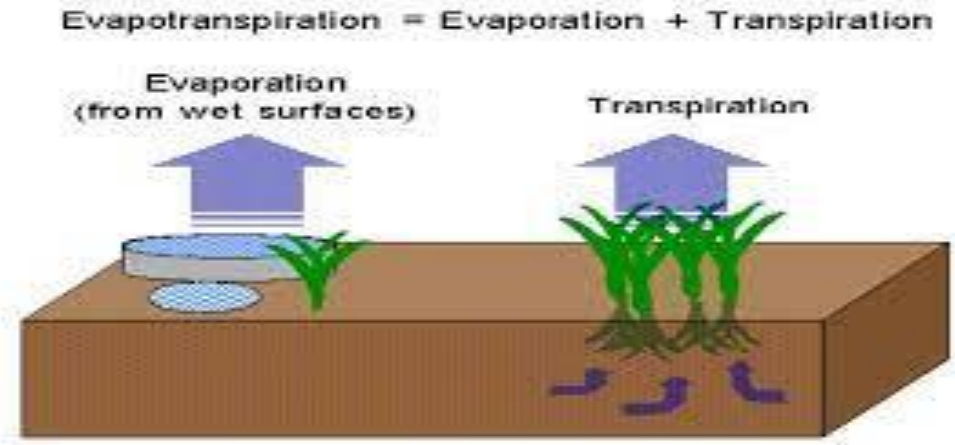


Figure 1. Evapotranspiration

The water demand of plants also depends on the type of soil, climate, biological characteristics of crop varieties, stages of plant development, duration of action period, soil fertility and applied care agrotechnics. Also, the transpiration coefficient, the level of plant root development, is influenced by hos.

In particular, the transpiration coefficient of a Bede plant with a strong root system is 446-1100, while the fact that a poplar root wheat is 231-557 is clear evidence.

The main focus in the Agriculture of our country is on the demand for water from one of the most important crops - Acorns.

For example, the Acorn's demand for water, according to its nature. it is not clearly delimited during the period of action, as well as in the process of the emergence of the crop. These processes are similar and interrelated. The entire growth period of the Acorn is divided into 3 periods, depending on the demand for water:
the first period is the period from sowing to flowering;
second period-flowering - fruiting period;
the third period is the period of ripening of the crop.

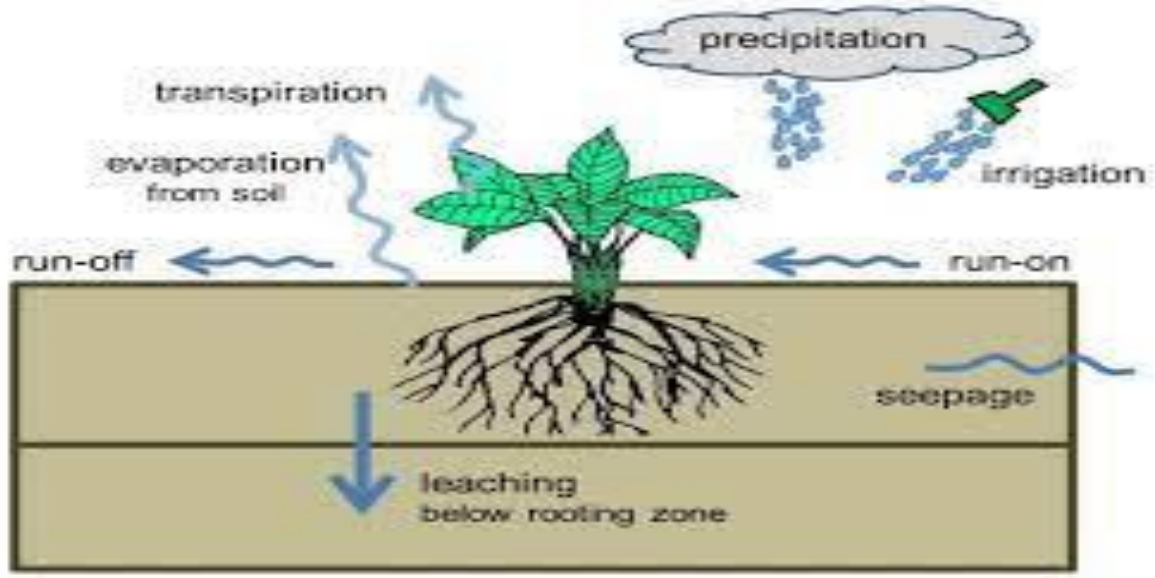
O‘simliklarning suvga bo‘lgan talabi birinchi davrdan keyingi davrlarga o‘tgan sayin ortib boradi. Jumladan, g‘o‘za o‘suv davrining boshlanishida suvni kam sarflaydi. Chunki bu vaqtda uning bargi hali unchalik ko‘p va katta bo‘lmaydi, havo harorati esa pastroq bo‘ladi va har gektar yerda bir sutkada 11 - 12 m^3 suv sarflaydi. O‘simlik o‘sgan, tanasi kattalashgan, barglari soni ortgan sayin va havo haroratining ko‘tarilishi tufayli o‘simlikda transpiratsiya

ortadi. G‘o‘zaning shonalash davriga kelib har gektar yerga 20 - 25 m3 suv sarflanadi. G‘o‘za gullash va meva tugish davrida suvni ko‘proq talab qiladi. Bu davrda gektariga o‘rtacha 90 - 115 m3, hatto undan ham ko‘proq suv sarflaydi. Hosil yetilishi davrida esa suv sarfi 30 - 35 m3 gacha kamayadi. Suv sarfi har xil sharoitda turlicha bo‘ladi va u tuproq unumdorligi hamda olingan hosilning miqdoriga qarab aniqlanadi.

The demand of plants for water increases with the transition from the first period to the next. In particular, the Acorn consumes little water at the beginning of the growing season. Because at this time its Leaf will not be so much and large yet, and the air temperature will be lower, and every hectare will spend 11 - 12 m3 of water per day. The plant is overgrown, the body is enlarged, the transpiration increases in the plant as the number of leaves increases and due to the rise in air temperature. 20 - 25 m3 of water is spent on every acre of land by the goshawk's shonation period. Acorns require more water during the flowering and fruiting period. During this period, it consumes an average of 90 - 115 m3 per hectare, or even more. And during the period of harvest, water consumption decreases to 30 - 35 m3. Water consumption varies under different conditions and is determined by the fertility of the soil as well as the amount of harvest obtained.

Barcha o‘simliklar ma’lum davrda suvni juda ko‘p talab qiladi. Shuning uchun o‘suv davrida tuproqda nam yetishmay qolsa, hosil maksimal darajadan kamayib ketadi, bu davr suv talab qilish davrining kritik davri, deb ataladi.

O‘simliklarning eng ko‘p suv talab qiladigan davri quyidagicha:
G‘o‘zada — gullash, meva tugish davrida;
Makkajo‘xorida- gullash va doni sut pishig‘i davrida;
Kungaboqarda - savatchasi hosil bo‘ladigan va gullash davrida;
Oqjo‘xori va tariqda - ruvagi hosil bo‘ladigan va doni yetiladigan davrda;
Dukkaklilarda va grechixada - gullash davrida;
Poliz ekinlarida - gullash va yetilish davrida;
Kartoshkada - gullash va tuganaklash davriga to‘g‘ri keladi.



All plants require a lot of water during a certain period. Therefore, if the soil lacks moisture during the growing season, the yield will decrease from the maximum, this period is called the critical period of the water demand period.

The most water-intensive period of vegetation is as follows:
Cotton-during flowering, fruiting;
In corn-during flowering and cereal milk ripeness;
In sunflower-during the period when the basket is formed and flowering;
In white sorghum and millet - bouquet of flowers are formed and the grain matures;
In legumes and buckwheat - during flowering;

Melon crops-during flowering and maturation;
In potatoes-coincides with the flowering and ripening period.

Table 13

Average daily water consumption in a cotton field, depending on productivity, ga/m (V.E.Yeremenko disambiguation)

The period of development of the Cotton	*Defined calendar period*	*Productivity, st/ga*	
		30-35	*45 or more*
Budding	*10-16, VI*	*18-20*	*20-25*
At the beginning of flowering	*1-5, VII*	*35-40*	*40-45*
In mass flowering	*15-20, VII*	*50-55*	*60-65*
At the beginning of fruiting	*1-5, VIII*	*75-80*	*90-95*
At the end of mass fruiting	*5-10, IX*	*85-90*	*100-105*
At the beginning of maturation	*1-5, IX*	*45-50*	*65-70*
At full maturity	*15-20, IX*	*25-30*	*30-35*

Dala sharoitida, turli tuproq-iqlim zonalarida ekinlar normal o‘sishi va rivojlanishi hamda yuqori hosil berishi uchun o‘simliklar butun amal davrida uzluksiz suv bilan ta’minlab turilishi zarur. Ma’lumki, o‘simlikka suv asosan barg sathining doimiy transpiratsiyasi natijasida kirib turadi. O‘simlikning suvga bo‘lgan talabi transpiratsiya koeffitsiyentiga qarab aniqlanadi, ya’ni o‘simlik talab etgan suv og‘irligi uning butun organlari og‘irligi (barg, novda, ildiz va boshqalar)ga nisbatan quruq modda hisobida olinadi.

O‘simliklarning suvga bo‘lgan talabi, ko‘pincha meteoro-logik sharoitlar - harorat, havo namligi, quyosh radiatsiyasining intensivligi va shamol tezligi bilan aniqlanadi. Ko‘p yillik tajribalar natijalariga qaraganda o‘simlik bir xil sharoitda bir joyning o‘zida 1*g* quruq modda hosil qilish uchun suvni har xil miqdorda sarflashini ko‘rsatadi. Bunda o‘simlikniig suvga bo‘lgan munosabati uning issiqlikka bo‘lgan talabi bilan aniqlanadi. Har bir mintaqada o‘simlikning issiqlikka bo‘lgan talabi ham o‘sha yerning meteorologik sharoitiga qarab keskin ravishda o‘zgaradi.

Yorug‘likning o‘simlik transpiratsiyasiga ta’siri ham ma’lum. Atrofdagi havo haroratining ko‘tarilishi va o‘simlikka tushadigan yorug‘likning ortishi transpiratsiyani oshiradi, natijada quruq modda hosil bo‘lishi uchun talab qilingan suv miqdori (transpiratsiya koeffitsiyenti) ortiqcha intensiv yorug‘likda kamayadi. Doimo quyosh tushib turadigan joydagi o‘simlik soyada o‘sgan o‘simlikka nisbatan ko‘proq suv sarflaydi.

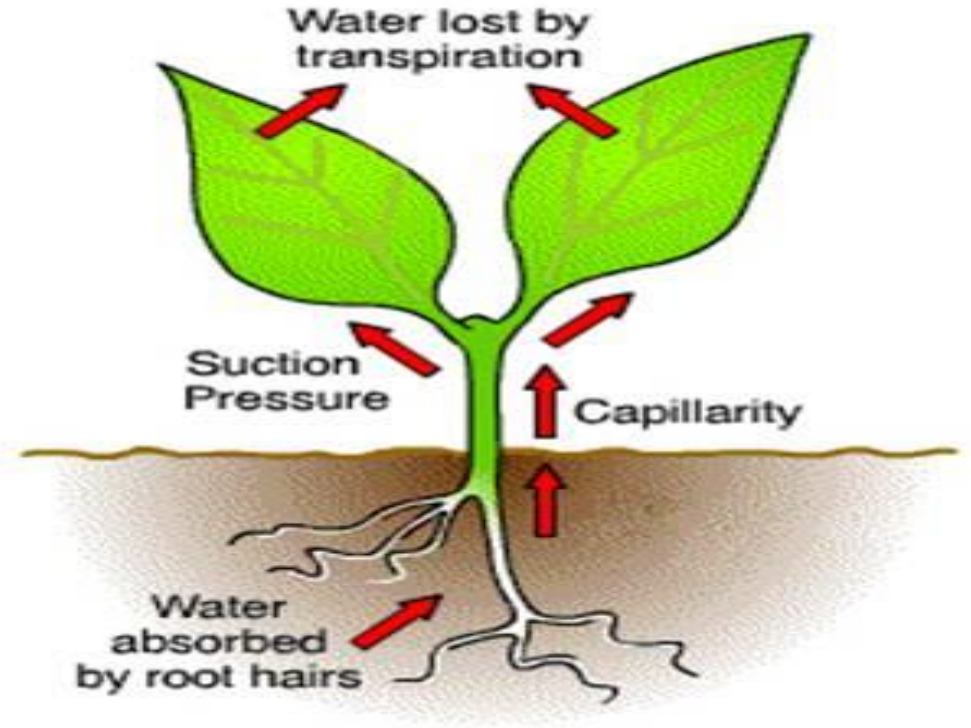
Ma’lumotlar shuni ko‘rsatdiki O‘rta Osiyoda havo namligi kam bo‘ladi, yuqori harorat, issiq va quruq shamol, ayniqsa quruq (garmsel) shamol o‘simlikda transgpiratsiyani kuchaytiradi, tuproqdan suv tez va ko‘p bug‘lanadi, natijada o‘simlikning suv rejimi buziladi, hosildorlik kamayadi. Ayniqsa Xovos, Qo‘qon guruhi tumanlarida, Surxondaryo, Qoraqum va Buxoro, shuningdek, Qoraqalpog‘istonning ko‘pchilik tumanlarida kuchli shamol esadi, u ekinlarning normal o‘sishiga salbiy ta’sir ko‘rsatadi. Bu yerlarda shamol ta’sirida tuproq qatlamidagi nam ko‘tarilib quriydi, unib chiqayotgan uruqqa va maysalarga tuproq nam yetkazib bera olmaydi, ekinlarning ko‘chati siyraklashib qoladi.

Akademik D.N.Pryanishnikov ma’lumotlariga ko‘ra, o‘g‘it solingan va solinmagan yerlarda transpiratsiya koeffitsiyenti tuproq namligi bilan ortib boradi. Tuproqdagi nam miqdoriga uning ustki qatlami tuzilishi ham anchagina ta’sir etadi. Ustki qatlam qanchalik tekis bo‘lsa, suv shunchalik kam bug‘lanadi. Yerni haydash vaqtida do‘ngliklar hosil bo‘lsa va palaxsa ko‘chsa, bunday yerlarda shamol ta’sirida ko‘plab nam bug‘lanadi.

In field conditions, in different soil-climatic zones, it is necessary for plants to be continuously supplied with water throughout the entire period of operation so that crops can grow and develop normally and produce high yields. It is known that water enters the plant mainly as a result of constant transpiration of the leaf surface.

The plant's demand for water is determined by the transpiration coefficient, i.e. the weight of water required by the plant is taken in the dry matter calculation relative to the weight of its entire organs (leaf, branch, root, etc. The demand of plants for water is often determined by meteoro-logical conditions - temperature, air humidity, intensity of solar radiation and wind speed.

Judging by the results of many years of experiments, the plant shows that it spends different amounts of water to form 1g of dry matter in the same place under the same conditions. In doing so, the attitude of the plantnig to water is determined by its demand for heat. The heat demand of the plant in each region also varies dramatically depending on the meteorological conditions of the locality. The effect of light on plant transpiration is also known. An increase in ambient air temperature and an increase in light incident on the plant increases transpiration, resulting in a decrease in the amount of water (transpiration coefficient) required for dry matter to form in excess intensity light.



A plant in a place where the sun is constantly falling consumes more water than a plant growing in the shade. The data showed that in Central Asia there is little air humidity, high temperatures, hot and dry winds, especially dry (garmsel) winds, increase transgression in the plant, water from the soil evaporates quickly and a lot, as a result of which the water regime of the plant is disrupted, productivity decreases. Especially in Khovos, Kokand group districts, Surkhandarya, Karakum and Bukhara, as well as most districts of Karakalpakstan, strong winds blow, which negatively affects the normal growth of crops. In these places, under the influence of the wind, the moisture in the soil layer rises and dries up, the soil cannot supply moisture to the sprouting uruces and grass, the seedling of crops becomes sparse.

Academic D.N.Pryanishnikov, the transpiration coefficient increases with soil moisture in fertilised and undiluted lands. The amount of moisture in the soil is also strongly influenced by the structure of its upper layer. The flatter the upper layer, the less water evaporates. If during the plowing of the Earth, dumps are formed and the palaxsa is displaced, many moisture evaporates under the influence of the wind on such lands.

Ma’lumki, havoning nisbiy namligi yuqori bo‘lganda, o‘simlik namni kam bug‘latadi va aksincha. Tuproqda nam yetishmasa, o‘simlikda so‘lish holati yuz beradi, barglar sarg‘ayadi, o‘simlikda biokimyoviy faoliyat buziladi.

Ekinlarning normal rivojlanishiga suv yetishmasligi ta’sir etibgina qolmay, balki suvning ortiqcha bo‘lishi ham ta’sir etadi. Yerda ortiqcha nam bo‘lishi tuproqdan o‘simlik ildizi uchun zarur bo‘lgan kislorodni siqib chiqaradi. O‘simlikning suvga bo‘lgan talabi barg sathining umumiy kattaligi, o‘suv davrining davomiyligi, ildizlarning ko‘pligi va tuproqda joylashuvi hamda o‘simlik navlarining biologik hossalariga bog‘liq.

Madaniy ekinlardan suvning bug‘lanish miqdori o‘simlikning suvga bo‘lgan talabiga, ekinlarning ko‘chat qalinligiga va ayrim o‘simliklarning barg chiqarish darajasiga bog‘liq bo‘ladi. Odatda yuqori kaloriyali oziqlar: yog‘, oqsilni ko‘p va uglerodni oz to‘plovchi o‘simliklarda barg sathi katta bo‘ladi.

O‘simlikning amal davri qanchalik uzoq bo‘lsa, u me’yorida o‘sishi va quruq modda hosil qilishi uchun shunchalik ko‘p suv talab etadi. Bunda ko‘p narsa ekinlarning biologik xususiyatlariga bog‘liq bo‘ladi. Me’yorida o‘sish va rivojlanish uchun tuproqda yetarli miqdorda suv zahirasi bo‘lishi kerak.

The normal development of crops is not only affected by a lack of water, but also by an excess of water. Being too wet on the ground will displace the oxygen needed by the plant root from the soil.

The plant's demand for water depends on the overall size of the leaf level, the duration of the growing season, the abundance of roots and their location in the soil, and the biological hosts of plant varieties.

The amount of evaporation of water from cultivated crops will depend on the plant's demand for water, the seedling thickness of the crops and the level of leaf release of certain plants. Usually high-calorie nutrients: in plants that accumulate fat, a lot of protein and little carbon, the leaf level is large.

The longer the period of action of the plant, the more water it requires to grow in moderation and form a dry substance. Much in this will depend on the biological characteristics of the crops. In order to grow and develop in moderation, the soil must have a sufficient supply of water.

Tuproq suv rejimini boshqarish

Tuproqning suv rejimini tartibga solib turish tadbirlari shu dalaning iqlim va tuproq sharoitlariga, shuningdek o‘stirilayotgan ekinlarning suvga bo‘lgan talabiga asoslanadi. O‘simliklarning o‘sib rivojlanishiga maqbul sharoit yaratish uchun tuproqda to‘planadigan namlik miqdori bilan uning transpiratsiyasiga va fizik bug‘lanishiga ketadigan sarfni tenglashtirish zarur.

Tuproqning suv rejimini tartibga solish tadbirlari har bir tuproq iqlim sharoiti uchun o‘ziga xos xususiyatga ega. Tuproqning suv rejimi to‘g‘ri bo‘lishi uchun tuproqning suv o‘tkazuvchanligini yaxshilash, nam sig‘imini oshirish, namning yuqoriga ko‘tarilish xususiyati va uning bug‘latish sathini kamaytirish kerak.

Tuproq suv o‘tkazuvchanligining yaxshi bo‘lishi keyinchalik yog‘in-sochin suvining yerga oson va to‘la shimilishini ta’minlash uchun zarur. Yuqori nam sig‘imi tuproq qatlamiga singayotgan suvni tutib qoladi va uning kamayi-shini minimum holga keltiradi. Tuproqning suv ko‘tarish xususiyatini kamaytirish tuproqning pastki qatlamidan yuqori qatlamiga ko‘tarilayotgan kapillyar namlikni qisqartish va bekorga bug‘lanishni ozaytirish, tuproqning bug‘latish sathini qisqartirish uchun kerak. Tuproq yuzasi yumshatilganda kapillyar oraliqlar buziladi, bu nam saqlashning yaxshi usuli hisoblanadi. Yumshoq g‘ovak qatlamli tuproqda nam yaxshi saqlanadi, yog‘in-sochin yoki sug‘orish natijasida u zichlashib qolsa, o‘sha vaqtning o‘zida pastki qatlam bilan kapillyar bog‘lanish hosil bo‘ladi va bug‘lanish keskin oshadi. Shuning uchun har galgi yomg‘ir yoki sug‘orishdan keyin yerning zichlashgan yuzasini yumshatish kerak.

Yerga muntazam ravishda ekin ekib turish juda muhimdir. Bunda o‘simlik orqali suvning ko‘p sarf bo‘lishiga qaramay, ayniqsa bargi enli ekinlar ekilgan tuproqda nam yetarli darajada saqlanadi. Suv bug‘lanish sathini kamaytirish uchun yerlarni yaxshilab tekislash, ya’ni palaxsalarni maydalash, agat va jo‘yaklarni yo‘qotish zarur.

Bizning adir iqlimli tog‘oldi sahro zonasida tuproqning suv rejimini yaxshilashda, namni saqlashda dala ixota daraxtzorlarining roli nihoyatda katta. Ixota polosalar dalani shamoldan to‘sib, tuproqdagi namni ortiqcha bug‘lanishdan saqlaydi.

Jadal usulda dehqonchilik yuritilayotgan hozirgi davrda tuproqning suv rejimini yaxshilash va namlikni saqlashda kuzgi shudgor ham muhim ahamiyatga ega. Akademik M.V.Muhammadjonov ma’lumotiga ko‘ra, haydalma qatlamning chuqur bo‘lishi tuproqda nam zahirasini oshiradi, yer chuqur yumshatilganda odatdagi haydalgan yerga qaraganda yog‘in-sochinlar hisobiga ekin ekilguniga qadar 1 *m* chuqurlikdagi qatlamda gektariga 150 - 200 *m3* gacha ko‘p suv to‘playdi. Tuproqdagi zahira namdan foydalanib, ekinlar urug‘i tekis unib chiqadi.

Soil water regime management

The measures for regulating the water regime of the soil are based on the climatic and soil conditions of this field, as well as the water demand of the crops being grown. In order to create optimal conditions for the growth of plants, it is necessary to equalize the expenditure on its transpiration and physical evaporation with the amount of moisture that accumulates in the soil.

Measures for the regulation of the water regime of the soil have their own characteristics for each soil climatic condition. In order for the water regime of the soil to be correct, it is necessary to improve the water permeability of the soil, increase the moisture capacity, reduce the upward nature of the moisture and its evaporation level.

The good water permeability of the soil is then necessary to ensure that the rain-sochin water is easily and completely absorbed into the ground. The high moisture capacity traps water that is seeping into the soil layer, and its help-makes the shine a minimum. Reducing the water-bearing nature of the soil is necessary in order to reduce the capillary moisture rising from the bottom layer to the top layer of the soil and reduce evaporation in vain, reducing the level of soil evaporation. When the soil surface is loosened, the capillary intervals break, which is a good way to keep it moist. In the soil with a soft porous layer, moisture is well stored, when it becomes dense as a result of precipitation-sochin or watering, a capillary bond with the lower layer is formed at the same time, and evaporation increases sharply.

Therefore, it is necessary to soften the compacted surface of the Earth after each year of rain or watering. It is very important to regularly plant crops on the ground. In this case, despite the high consumption of water through the plant, moisture is maintained sufficiently, especially in the soil where Leaf-width crops are planted. To reduce the level of water evaporation, it is necessary to thoroughly level the land, that is, grind the palaxas, lose agates and Furrows. The role of field ixota Groves in improving the water regime of the soil in the desert zone of our adir-climate mountainous region, in maintaining moisture is extremely large.

Ixota Polosa block the field from the wind, preventing moisture in the soil from over-evaporation. In the current period of intensive cultivation, autumn plowing is also important in improving the water regime of the soil and maintaining moisture.

Academician M.V.Muhammadjonov, the deepness of the ploughing layer increases the wet Reserve in the soil, accumulating up to 150-200 m3 of water per hectare in a layer 1 m deep until the crop is planted at the expense of precipitation - sochins than in the usual ploughed land when the Earth is deep loosened. Using the Reserve moisture in the soil, the seeds of crops germinate evenly.

TUPROQNING OZIQ REJIMI

Oziq moddalar o‘simlik hayotidagi zarur va juda murakkab omil hisoblanadi, ularni boshqa omillar (suv, havo, yorug‘lik, issiqlik) bilan almashtirib bo‘lmaydi. Shuningdek, bir oziq moddani boshqasi, masalan, fosforni, azot, kaliy, natriy yoki kalsiy bilan almashtirib bo‘lmaydi.

Agar tuproqda o‘simliklar o‘zlashtira oladigan holdagi oziq moddalar yetarli bo‘lmasa, ekinlardan mo‘ljaldagi hosilni olib bo‘lmaydi. O‘simliklar hayoti ikki jarayondan:

a) qabul qilish va to‘plash;

b) ajratish va moddalarni sarflashdan iborat.

O‘simlikka moddalarning kelishi va qabul qilinishi, ya’ni uning oziqlanishi, oziq moddalarning to‘planishi o‘simlikning bo‘yiga o‘sishi va salmog‘ining ortishi uchun kerak. Shu bilan bir vaqtda nafas olish paytida moddalarning kislorod bilan oksidlanish, parchalanish va ajralish jarayonlari boradi. Busiz hayot bo‘lmaydi va sarflanish qanchalik tez o‘tsa, hayot faoliyati ham shuncha tez o‘tadi. Ikki jarayon - sintez (vujudga kelish) va parchalanish (sarflanish)ning birgalikda sodir bo‘lishi sarflangan moddani qayta hosil qilayotgan tirik o‘simlikni harakterlaydi. Dala sharoitida o‘simliklarning maksimal darajada rivojlanishiga ta’sir etish dehqonchilikning asosiy maqsadidir.

O‘simliklar o‘zi uchun kerakli oziq moddalarni tuproqdan, atmosferadan, gidrosferadan va fazodan oladi. O‘simlik organizmining tarkibiy qismiga o‘tishdan oldin unga kelayotgan moddalar qator o‘zgarishlarga uchraydi, bunday o‘zgarishlar kimyo va fizika qonunlariga asosan sodir bo‘ladi. Issiqlik kaloriyalarini ham, uglerod, azot, fosfor, vodorod, kislorod va boshqa elementlarni ham o‘simliklar tashqi muhitdai oladi.

Dalada o‘stirilayotgan barcha o‘simliklar oziq moddalarni asosan tuproq tarkibidagi yoki o‘simlikka o‘g‘it sifatida solingan mineral moddalardan oladi. Shuningdek, ular oddiy aminokislotalar, fitin va boshqa shakldagi organik moddalardan foydalanishi mumkin.

Dala sharoitida o‘stirilayotgan ko‘pgina ekinlar avtotrof hisoblanadi, ya’ni asosan tuproqda bo‘ladigan yoki kerakli shakllarda o‘g‘it sifatida solingan oksidlangan mineral birikmalar bilan oziqlanadi. Avtotrof o‘simliklarga qatlam hosil qilib o‘sadigan o‘simliklardan tashqari barcha bir yillik o‘simliklar kiradi. Ko‘p yillik g‘allasimon ekinlar ham avtotrof o‘simliklarga kiradi, lekin ularning ayrimlari ***fakultativ mikrotrof o‘simliklar*** deyiladi. Bir yillik, ikki yillik dukkakli ekinlar azot bilan oziqlanishiga qarab ***bakteriotrof o‘simliklar*** deyiladi. Ular havodagi erkin azotni o‘simliklarning ildiz tizimida simbioz holda yashaydigan tuganak bakteriyalar yordamida o‘zlashtiradi.

SOIL FOOD REGIME

Nutrients are a necessary and very complex factor in plant life, which cannot be replaced by other factors (water, air, light, heat). Also, one nutrient cannot be replaced by another, such as phosphorus, nitrogen, potassium, sodium or calcium.

If there is not enough nutrients in the soil that the plants can absorb, the intended crop cannot be taken from the crops. Plant life from two processes:

a)receiving and collecting;

b)consists of separation and the expenditure of substances. The arrival and ingestion of substances into the plant, that is, its nutrition, the accumulation of nutrients, is necessary for the growth of the plant to the height and the increase in salinity. At the same time, during breathing, the processes of oxidation, decomposition and separation of substances with oxygen go. Without it, there will be no life, and the faster the spending, the faster the life activity will pass. The joint occurrence of two processes - synthesis (occurrence) and decay (consumption) - characterizes a living plant that is re-forming the spent substance. Influencing the maximum development of plants in field conditions is the main goal of farming. Plants receive the nutrients they need from the soil, atmosphere, hydrosphere, and space.

Substances coming to it before moving to the constituent part of the plant organism undergo a series of changes, such changes occur mainly due to the laws of chemistry and physics. Both thermal calories and carbon, nitrogen, phosphorus, hydrogen, oxygen and other elements are obtained by plants in the external environment. All plants grown in the field receive

nutrients mainly from mineral substances contained in the soil or applied to the plant as fertilizers. They can also use simple amino acids, phytin and other forms of organic matter.

Most crops grown in field conditions are autotrophic, that is, they are fed mainly with oxidized mineral compounds that are present in the soil or that are infused as fertilizers in the desired forms. Autotrophic plants include all annuals except those that grow by forming a layer. Perennial gravelly crops also belong to autotrophic plants, but some of them are called facultative microtrophic plants. Annual, biennial legumes are called bacteriotrophic plants, depending on their nitrogen nutrition. They absorb free nitrogen in the air with the help of legume bacteria, which live in symbiosis in the root system of plants.

Tuproqning oziq rejimini boshqarish

1.Tuproqning oziq rejimini boshqarish jarayonida uni organik moddalar bilan boyitish zarur. Buning uchun avvalo: ekinlarni hozirgi zamon talabiga moslab almashlab ekishni, navbatlab ekishni joriy etish zarur.

2.Go‘ng kamida boshqa organik o‘g‘itlar solish bilan bir qatorda oraliq ekinlar, ayniqsa dukkakdosh ekinlarni ko‘kat o‘g‘it sifatida ekish yo‘li bilan tuproqning oziq rejimini va tabiiy hossalarini yaxshilashga erishiladi.

3.Tuproqdagi turli xil mikroorganizmlar hayotiy faoliyati uning suv, havo va issiqlik rejimiga bog‘liq. Shuning uchun dehqonchilikda tuproq holatiga va foydali mikroorganizmlarning faoliyatiga ijobiy ta’sir etadigan yuksak agrotexnika, melioratsiya tadbirlarini amalga oshirish zarur. Bunda ayniqsa sho‘r yuvish, sizot suvlari sathini pasaytirish uchun muntazam ravishda zovurlarni tozalab turish, yerlarni o‘z vaqtida chuqur va sifatli haydash zarur.

4.Ko‘p yillik ilmiy tadqiqotlarga qaraganda azot,fosfor va kaliy barcha ekinlar hosildorligini keskin oshiradi. O‘g‘itlar nisbati tuproq tipiga, o‘g‘itlash usuliga, muddatiga ko‘ra turlicha bo‘ladi, bunga amal qilish o‘g‘itlarning samaradorligini birmuncha oshiradi. Fosforli va kaliyli o‘g‘itlar yillik me’yorining asosiy qismini tuproq tipiga qarab yerlarni shudgorlashdan oldin, azotli o‘g‘itlarni esa amal davrida berish maqsadga muvofiq bo‘ladi.

5.Amal davrida dalani begona o‘tlardan tozalab turish zarur. Ekinlarni me’yoridan ortiq (ezib) sug‘orish, ya’ni oziq moddalarning haydalma qatlamdan pastga yuvilib ketishiga yo‘l qo‘ymaslik kerak.

6.Tuproqdagi oziq moddalar(ayniqsa azot)ni saqlash va mikroorganizmlar faoliyatini kuchaytirish uchun, ekinzorlar yil davomida ekinlar bilan band bo‘lishi kerak. Ana shunda oziq moddalar bekorga sarflanmaydi. Masalan, dalalar kuzda, qishda va bahorda oraliq ekinlar bilan band qilinsa, oziq elementlari behuda sarf bo‘lmaydi.

7.Ekinlardan yuqori hosil olish uchun ekinzorlar tuproq xaritanomalari asosida o‘g‘itlansa, oziq moddalarning samaradorligi ortadi.

Oziq moddalar va suv tuproq unumdorligining asosiy elementlari hisoblanadi.O‘simliklarning bu elementlarga talabchanligi ekinlarning turiga, naviga, hosildorligiga bog‘liq. O‘simliklarning bu sohadagi talabini qondirish dehqonchilikdagi asosiy masalalardan biri hisoblanadi.

Tuproqning oziq rejimini boshqarishdagi barcha tadbirlarni quyidagi gruppalarga bo‘lish mumkin:

a)tuproqni oziq moddalar bilan boyitish;

b)tuproqdagi o‘simliklar qiyin o‘zlashtiradigan oziq elementlarini o‘zlashtiriladigan holatga o‘tkazish;

v)oziq moddalarni o‘simliklar oson o‘zlashtirishi uchun sharoit yaratish;

g)tuproqda oziq moddalar kamayishiga qarshi ko‘rashish.

Ma’lumki, asosan yerga mineral o‘g‘itlar solish orqali tuproq oziq moddalarga boyitiladi. Ammo yuqorida keltirilgan tadbirlar hamda tuproqda atmosfera azotining fiksatsiya hisobiga to‘planishi bevosita dehqonchilik madaniyatiga va qo‘llanilayotgan agrotexnika tadbirlariga borliq.

Ekinlardan mo‘l va sifatli hosil olishda tuproqning oziq rejimini boshqarish va uni o‘rganish katta ahamiyatga ega.

Madaniy o‘simliklarning hayoti doimo tashqi muhit bilan o‘zaro bog‘liq. Chunki, o‘simliklar tashqi muhitdan normal o‘sish va rivojlanish uchun zarur moddalarni oladi. O‘simliklar bilan tashqi muhit o‘rtasida moddalar almashinadi, bunda ildizdan oziqlanish ayniqsa muhimdir. Bu protsessda o‘simliklar ildizi orqali tuproqdan har xil oziq moddalarni suv bilan birgalikda osmotik bosim ta’sirida singdirib oladi va olingan moddalar fizik va ximiyaviy qonunlar asosida qator murakkab o‘zgarishlardan so‘ng o‘simliklar organlari hamda to‘qimalarining tarkib topishida, shuningdek, ularning doimo yangilanib turishida sarflanadi.

Tuproqdagi mikroorganizmlar hayot faoliyati natijasida hosil bo‘ladigan mahsulotlar ildiz sistemasining aktivligini kuchaytiradi, natijada organik moddalar o‘simliklarning yer ustki qismiga, undan esa ildiz sistemasiga o‘tadi.

O‘simliklar oziq moddalarni tuproqdan, atmosferadan, gidrosferadan va yorug‘lik, issiqlikni esa fazodan oladi.

O‘simliklar hayotida oziqlanish eng muhim faktorlardan hisoblanadi. Oziqlanish – har qanday tirik organizmning, shu jumladan, o‘simliklarning ham o‘sish va rivojlanish asosidir. O‘simliklar qancha normal oziqlansa, shuncha yaxshi o‘sadi va rivojlanadi. Barcha o‘simliklarning normal o‘sishi rivojlanishi uchun yorug‘lik, issiqlik, suv va havo qancha zarur bo‘lsa, oziq moddalar ham shuncha zarurdir. Ulardan birining o‘rnini ikkinchisi bosa olmaydi.

Soil food regime management

1.In the process of controlling the food regime of the soil, it is necessary to enrich it with organic matter. To do this, first of all: it is necessary to introduce crop rotation, alternating planting, in accordance with the current demand.

2.In addition to applying at least other organic fertilizers, manure is achieved by planting intermediate crops, especially legumes, as a Green Fertilizer, improving the soil's food regime and natural feature.

3.The vital activity of various microorganisms in the soil depends on its water, air and heat regime. Therefore, in agriculture, it is necessary to carry out high agrotechnical, melioration measures that positively affect the condition of the soil and the functioning of beneficial microorganisms. In this, it is especially necessary to wash the Salt, regularly clean the ditches to lower the level of sizot water, and to drive the land deep and high-quality in time.

4.Compared to many years of scientific research,nitrogen, phosphorus and potassium dramatically increase the yield of all crops. The ratio of fertilizers will vary according to the type of soil, the method of fertilizing, the duration, compliance with which will somehow increase the effectiveness of fertilizers. Phosphorus and potash fertilizers it is advisable to give the bulk of the annual norm before plowing the lands according to the type of soil, and nitrogen fertilizers during the period of action.

5.During the period of operation, it is necessary to clean the field from weeds. Watering crops more than normal (crushed), that is, it is necessary to prevent the nutrients from washing down from the expelled layer.

6.In order to preserve nutrients(especially nitrogen)in the soil and enhance the activity of microorganisms, cultivated areas must be occupied with crops throughout the year. It is then that nutrients are not wasted. For example, when the fields are occupied by intermediate crops in autumn, winter and Spring, Food elements will not be wasted.

7.The effectiveness of nutrients increases if the crops are fertilized on the basis of soil mapanomas in order to obtain a higher yield from crops. Nutrients and water are the main elements of soil fertility.The exactingness of plants to these elements depends on the type, variety, yield of crops. Meeting the demand of plants in this area is one of the main issues in agriculture.

All activities in the management of the soil food regime can be divided into the following gruppas:

a) enriching the soil with nutrients;

b) the transfer of food elements that plants in the soil have difficult to absorb into an absorbable state;

c) create conditions for easy absorption of nutrients by plants; g) to resist nutrient depletion in the soil. It is known that mainly by applying mineral fertilizers to the ground, the soil is enriched in nutrients. But the presence of the above activities and the accumulation of atmospheric nitrogen in the soil at the expense of fixation directly into the culture of Agriculture and the agrotechnical activities being applied. In obtaining a rich and high-quality harvest of crops, it is of great importance to control the food regime of the soil and study it.

The life of cultural plants is always interconnected with the external environment. Because, plants receive the necessary substances from the external environment for normal growth and development. Substances are exchanged between plants and the external environment, in which Root nutrition is especially important. In this process, plants absorb various nutrients from the soil through their roots in combination with water under the influence of osmotic pressure, and the substances obtained are spent in the formation of plant organs and tissues, as well as in their constant renewal, after a series of complex changes based on physical and chemical laws.

The products produced by the life activity of microorganisms in the soil enhance the activity of the root system, as a result of which organic matter moves to the ground surface of plants, and from it to the root system. Plants receive nutrients from the soil, atmosphere, hydrosphere and light, and heat from space. Nutrition in plant life is one of the most important factors. Nutrition is the basis of growth and development of any living organism, including plants.

The more normal the plants are fed, the better they grow and develop. The more light, heat, water and air are needed for the normal growth of all plants to develop, the more nutrients are needed. One of them cannot be replaced by the other.

O‘simliklar tarkibida azot, fosfor, kaliy, kal’siy, magniy, temir elementlar anchagina bo‘ladi, ular ***makroelementlar***, oz miqdorda (0,01—0,001 %) bor, mis, rux, marganes, kobalt, molibden kabi elementlar uchraydi, ular ***mikroelementlar*** deb ataladi. Ba’zi o‘simliklardagina oz miqdorda stronsiy, seziy, rubidiy kabi elementlar bor, ular *ul’tramikroelementlar* deyiladi. O‘simliklar tarkibida 70 dan ortiq ximiyaviy element topilgan. O‘simliklarni ximiyaviy analiz qilish tufayli umumiy og‘irligining taxminan 45% uglerod, 42% kislorod, 6,5% vodorod, 5% kul va boshqa elementlarga to‘g‘ri kelishi aniqlangan. O‘simliklarga kul elementlari faqat ildizi orqali emas, balki barglari orqali ham o‘tadi.

Ko‘pchilik tuproqlarda o‘simliklar oson o‘zlashtiradigan shakldagi azot, fosfor va kaliy kam bo‘ladi, ammo o‘simliklarning bu elementlarga bo‘lgan talabi asosan yerga har xil mineral o‘g‘itlar solish orqali qondiriladi. Vegetatsiya davrida o‘simliklar o‘zlashtirgan ayrim elementlar bevosita ularning organlari va to‘qimalari tarkibiga kirmaydi, lekin ularning tarkib topishida muhim rol o‘ynaydi. Bunday elementlar ***katalizatorlar*** deyiladi. Ular o‘simliklarda moddalar almashinishini tezlashtiradi, to‘qimalarda zarur fizik-ximiyaviy holatlarni aniqlaydi va ularda organik moddalarning harakatlanishini ta’minlaydi. Tuproqda zarur oziq elementlardan birortasi yetishmasa, o‘simliklar normal o‘sib rivojlanmaydi. Lekin oziq elementlari haddan tashqari ko‘p bo‘lsa ham o‘simliklarga salbiy ta’sir etadi.

Oziq moddalarni o‘zlashtirish miqdori ekinlarning turiga, naviga, hosiliga va ular o‘sayotgan sharoitga bog‘liq.

Jadval ma’lumotlaridan deyarli barcha ekinlar azot elementiga talabchan ekanligi ko‘rinib turibdi, chunki u o‘simliklarning o‘sishini ta’minlaydi. G‘o‘za azot, fosfor va kaliyga nixoyatda talabchan o‘simlik. Masalan, 1 t paxta yetishtirish uchun taxminan 56 kg azot, 23 kg fosfor va 53 kg kaliy talab qilinadi. Kungaboqar azot va fosforga qaraganda kaliyni ko‘proq o‘zlashtiradi. 1 g kungaboqar hosili uchun tuproqdan 228 kaliy, 50 kg azot va 27 kg fosfor sarflanadi. Ildizmevalar va tuganakmevalar ham fosfor va azotga qaraganda kaliyga ko‘proq talabchan. Masalan, 1 t kartoshka yetishtirish uchun 8 kg kaliy, 2 kg fosfor va 6,2 kg azot; 1 t soya hosili uchun 71 kg azot, 16 kg fosfor va 18 kg kaliy zarur.

Plants contain a large number of nitrogen, phosphorus, potassium, calcium, magnesium, iron elements, they contain Macroelements, small amounts (0.01—0.001%), elements such as copper, zinc, manganese, cobalt, molybdenum are found, which are called microelements. Some plants only have a small amount of elements such as Strontium, caesium, rubidium, which are called ul'tramicroelements. More than 70 chemical elements have been found in plants. Due to the chemical analysis of plants, it has been found that about 45% of its total weight corresponds to carbon, 42% oxygen, 6.5% hydrogen, 5% ash and other elements. To plants, ash elements pass not only through the roots, but also through the leaves.

Most soils are low in nitrogen, phosphorus, and potassium, a form that plants easily absorb, but plant demand for these elements is largely satisfied by applying various mineral fertilizers to the ground. Some elements that plants absorb during the growing season are not directly part of their organs and tissues, but play an important role in their composition. Such elements are called catalysts. They accelerate the exchange of substances in plants, determine the necessary physical and chemical States in tissues and ensure the movement of organic matter in them.

When the soil lacks any of the necessary food elements, the plants do not grow normally. But even if there are too many food elements, it negatively affects plants. The amount of nutrient absorption depends on the type, variety, yield of crops and the conditions in which they grow. From the table data, it can be seen that almost all crops are demanding on the nitrogen element, since it promotes plant growth.

Hawthorn is a demanding plant in nitrogen, phosphorus and potassium. For example, the production of 1 t cotton requires about 56 kg of nitrogen, 23 kg of phosphorus and 53 kg of potassium. Sunflower absorbs more potassium than nitrogen and phosphorus. For 1 g of sunflower crop, 228 potassium, 50 kg of nitrogen and 27 kg of phosphorus are consumed from the soil. Ildysmevas and tuganakmevas are also more demanding on potassium than phosphorus and nitrogen. For example, to grow 1 t potatoes, 8 kg of potassium, 2 kg of phosphorus and 6.2 kg of nitrogen are needed; for a harvest of 1 t of soybeans, 71 kg of nitrogen, 16 kg of phosphorus and 18 kg of potassium.

Vegetatsiya davrida o‘simliklar tuproqdan qancha miqdorda oziq moddalar o‘zlashtirishi ularning rivojlanish fazalariga va o‘sish sharoitiga qarab turlicha bo‘ladi.

The amount of nutrients plants absorb from the soil during the growing season varies depending on the phases of their development and the growing conditions.

Table 3.

Which goes out along with 1 ton of products, depending on the type of crops nutrients (kg)

№	***Crops***	***Nitrogen***	***Phosphorus***	***Potassium***
1	Cotton	56	23	53
2	Winter wheat	37	13	23
3	Barley	29	11	20
4	Spring wheat	47	12	18
5	Oats	33	14	29
6	Corn (for grain)	34	12	37
7	Rye	31	14	26
8	Rice	21	8	26
9	Simply	33	10	34
10	Blue Peas	66	15	40
11	Sugar beet	80	40	70
12	Potato	5,9	1,8	7,5
13	Sunflower seeds	6,2	2,0	8
14	Tobacco	50	27	228
15	Soybean	24	7	51
16	Corn (for silage)	71	16	18

17	Melon crops	2,4	0,9	3,6
18	Tubers	5,5	1,6	5
19	Tea leaf (dried)	2,7	1,9	4,8

Vegetatsiya davrida o‘simliklar tuproqdan qancha miqdorda oziq moddalar o‘zlashtirishi ularning rivojlanish fazalariga va o‘sish sharoitiga qarab turlicha bo‘ladi.

Ekinlarning hosildorligi ortib borishi bilan tuproqdan sarflanadigan oziq moddalarning miqdori ham ortib boradi.

Masalan, gektaridan 14,1 s hosil olinganda, har gektar yerdan o‘rtacha 45,6 kg azot, 14,3 kg fosfor, 40,3 s hosil yetishtirilganda esa 182,6 kg azot va 55,4 kg fosfor hamda boshqa elementlar chiqib ketadi. Shuning uchun yerlarga solinadigan o‘g‘itlarning normasi belgilanayotganda yetishtirilayotgan hosil miqdorini ham nazarda tutish tuproq unumdorligini bir me’yorda saqlashda katta ahamiyatga ega.

Odatda, oziq elementlarining umumiy miqdori har gektar yerda bir necha tonna atrofida bo‘ladi. Masalan, S. P. Suchkov ma’lumotiga ko‘ra, qadimdan (100 yildan ortiq) sug‘orib dehqonchilik qilinayotgan bir gektar tipik bo‘z tuproqli yerning haydalma (0—28 sm) qatlamida o‘rtacha 59,1 t chirindi, 4 t azot,8 t. fosfor va undan keyingi (28—100-sm) qatlamida esa yuqoridagilarga muvofiq 73,5, 4,97 va 16 t oziq elementlari bo‘lar ekan.

Tuproqda oziq elementlarining umumiy miqdori qancha ko‘p bo‘lmasin, u ishlab chiqarish sharoitida o‘simliklarning oziq moddalarga bo‘lgan talabini yetarli darajada qondirolmaydi. Shuning uchun ekinlardan mo‘l hosil yetishtirishda yerga mineral o‘g‘itlar solinadi. Jadval ma’lumotlaridan, tuproqda oziq moddalarning umumiy miqdori ko‘p bo‘lishidan qat’i nazar, gektariga 80 kg azot solinganda paxta hosili 24,2%, gektariga 150 kg solinganda esa 32,3% ko‘payganligi ko‘rinib turibdi. G‘o‘za hosildorligining keskin ortishiga asosiy sabab tuproqdagi barcha oziq moddalarning ko‘pchilik qismi o‘simliklar jadallik bilan o‘zlashtiradigan yoki butunlay o‘zlashtirolmaydngan holatda bo‘lishidir, chunki oziq moddalar tuproq eritmasida o‘simliklar oson o‘zlashtiradigan holatda kam bo‘ladi.

The amount of nutrients plants absorb from the soil during the growing season varies depending on the phases of their development and the growing conditions.

With an increase in crop yields, the amount of nutrients spent from the soil also increases. For example, when a yield of 14.1 s per hectare is obtained, on average 45.6 kg of nitrogen, 14.3 kg of phosphorus, and when a yield of 40.3 s is grown, 182.6 kg of nitrogen and 55.4 kg of phosphorus and other elements are released from each hectare.

Therefore, even referring to the amount of crop grown when the norm of fertilizers applied to the lands is established is of great importance in maintaining soil fertility in one norm. Typically, the total amount of food elements is around a few tons per hectare.

For Example, S. P.Suchkov, an average of 59.1 t humus, 4 t nitrogen,8 t in the plowing (0-28 cm) layer of one hectare of typical rich soil, which has long been irrigated and farmed (more than 100 years). and in the phosphorus and its subsequent (28-100-cm) layer there will be 73.5, 4.97 and 16 T food elements according to the above. No matter how large the total amount of food elements in the soil, it is not able to adequately meet the demand of plants for nutrients under production conditions.

Therefore, mineral fertilizers are applied to the ground in the production of rich crops. Table data shows that cotton yields increased by 24.2% when 80 kg of nitrogen is applied per hectare, regardless of the total amount of nutrients in the soil, and by 32.3% when 150 kg is applied per hectare. The main reason for a sharp increase in the yield of Acorns is that most of all nutrients in the soil are in a state in which the plants are intensively assimilated or cannot completely assimilate, since nutrients are scarce in the soil solution in a state that the plants easily assimilate.

Shu bilan birga ularning miqdori tuproq sharoitiga qarab o‘zgarishi mumkin. Dehqonchilikdagi muhim masalalardan biri, tuproq tarkibidagi o‘simliklar qiyin o‘zlashtiradigan shakldagi oziq moddalarni oson o‘zlashtira oladigan holatga o‘tkazishdan iborat.

O‘simliklarning ildizi orqali oziqlanishi faqat yerga solinayotgan o‘g‘itlarga emas, balki tuproq muhitiga, mikroorganizmlarning faoliyatiga, organik moddalarning chirishiga va tuproqning suv, havo hamda issiqlik rejimini yaxshilashga qaratilgan agrotexnika tadbirlarining qo‘llanilishiga ham ko‘p jihatdan bog‘liq.

O‘simliklar 3 xil: avtotrof, mikrotrof va bakteriotrof usulda oziqlanadi. Avtotrof oziqlanishda o‘simliklar tuproqdan suvda erib oksidlangan mineral tuzlarni o‘zlashtiradi. Oziqlanishning bu usuli ekinlar uchun asosiy hisoblanadi.

Mikrotrof oziqlanish mikoriza yordamida sodir bo‘ladi. Mikoriza o‘simliklarning oziqlanishiga yordamlashib, ularning hayotiga salbiy ta’sir etmaydi. Ayrim ma’lumotlarga qaraganda, mikoriza tuproqdagi zararli Mikroorganizmlarning antagonisti — dushmani hisoblanadi.

Ayrim mikorizalar havodagi erkin azotni o‘zlashtirib o‘simliklarni ta’minlaydi. Avtotrof usulda oziqlanadigan ayrim o‘simliklar fakul’tativ mikrotrof o‘simliklarga ham tegishlidir, ya’ni ular bevosita va mikorizalar yordamida oziqlanishi mumkin.

O‘simliklarning mikrotrof usulda oziqlanishi hozircha kamroq, lekin o‘simlik va tuproq bakteriyalari orasidagi munosabati ancha mukammal o‘rganilgan. O‘simliklarning bakteriyalar yordamida oziqlanishi bakteriotrof oziqlanish deyiladi.

At the same time, their amount can vary depending on the soil conditions. One of the important issues in agriculture is the transfer of nutrients of a form that the plants in the soil are difficult to absorb into a state that is easy to absorb.

The nutrition of plants through the root depends not only on fertilizers being laid on the ground, but also on the soil environment, the activity of microorganisms, the rotting of organic matter and the application of agrotechnical measures aimed at improving the water, air and thermal regime of the soil in many ways.

Plants are fed in 3 ways: autotrophic, microtrophic and bacteriotrophic. In autotrophic nutrition, plants absorb oxidized mineral salts by dissolving them in water from the soil. This method of feeding is fundamental for crops. Microtrophic nutrition occurs using mycorrhiza.

Mycorrhiza contributes to the nutrition of plants and does not adversely affect their life. According to some reports, mycorrhiza is an antagonist — enemy of harmful microorganisms in the soil.

Some mycorrhizae provide plants by absorbing free nitrogen from the air. Some plants that feed autotrophically also belong to facultative microtrophic plants, that is, they can be fed directly and using mycorrhizae.

Microtrophic plant nutrition is currently less, but the relationship between plant and soil bacteria has been studied much more perfectly. Bacterial nutrition of plants is called bacteriotrophic nutrition.

J.B.Bussenko va uning shogirdi Timiryazev biripchi marta biologik azotning bog‘lanishini, ya’ni sebarga va beda tuproqni azot bilan boyitishini ochdilar. S.N.Vinogradskiy 1894 yili anaerob bog‘lovchilarni ajratishga muvaffaq bo‘ldi.

Nemis olimi Gelrigel 1886 yili dukkakdosh o‘simliklar ildizida tuganaklar bo‘lgandagina, ular molekulyar azotni o‘zlashtirishini, 5 yildan keyin esa Gollandiya olimi Beyerink tuganaklarda bakteriyalar borligini aniqladi. Beyerink 1901 yili azot bakteriyasini ajratib oldi. SHunday qilib, dukkakdosh o‘simliklar va tuganak bakteriyalar orasida o‘zaro bog‘liqlik borligi ochiq oydin aniqlandi.

O‘simliklar va bakteriyalar orasida oziq moddalar tuganak va ildizlarni bir-biriga mustahkam bog‘lovchi tomir—tukchalar orqali o‘zaro almashinadi. Dukkakdosh o‘simliklarning ildizi bir-biridan ximiyaviy tarkibi va boshqa hossalari jihatidan farq qilib, tuganaklari har xil bo‘ladi. Masalan, lyupin va seradella ildizida faqat shu ekinlarga mos bakteriyalar, sebarga va loviya ildizida esa boshqa turlari rivojlanadi. Beda, ko‘k no‘xat, mosh va boshqa dukkakdosh o‘simliklarda o‘ziga xos turdagn tuganak bakteriyalar bor.

Keyingi yillarda o‘simliklarda oziqlanishning biologik usuli keng ko‘lamda tarqalmoqda, bunda o‘simliklar ildizida, ya’ni ildiz atrofida (rizosferada), ildiz ichida (geterotrof

va simbiotrof) oziqlanadigan tuproq mikroorganizmlari (bakteriyalar, zamburug‘lar)ga katta ahamiyat berilmoqda.

J.B.Bussenko and his student Timiryazev opened for the first time The Binding of biological nitrogen, namely sebarga and beda enriching the soil with nitrogen. S.N.Vinogradsky managed to separate anaerobic binders in 1894.

The German scientist Gelrigel found that only in 1886, when legumes had tubers in their roots, they absorbed molecular nitrogen, and 5 years later, the Dutch scientist Beyerink found that there were bacteria in the tubers. Beyerink isolated nitrogen bacteria in 1901. Thus, it was clearly established that there is a correlation between legumes and legume bacteria.

Among plants and bacteria, nutrients are exchanged through the stem-hairs, which firmly connect the roots and roots to each other. The roots of legumes differ from each other in terms of their chemical composition and other Hossa, and the tubers are different. For example, in the root of lupine and seradella, only bacteria suitable for these crops develop, and in the root of sebarga and beans, other types. Alfalfa, blue peas, mosh and other legume plants have specific turdagn-borne bacteria.

In later years, the biological method of plant nutrition is becoming widespread, with great importance given to soil microorganisms (bacteria, fungi) that feed on the root of plants, that is, around the root (rhizosphere), inside the root (heterotrophs and symbiotrophs).

GLOSSARY

Atamaning nomlanishi			Atamaning ma’nosi
Atamaning o‘zbek tilida nomlanishi	**Atamaning ingliz tilida nomlanishi**	**Atamaning rus tilida nomlanishi**	
Dehqonchilik	Agriculture	Земледелие	Ekinlardan sifatli va yuqori hosil olish uchun parvarish qilish usullari agrotexnologik jarayonlar
Tuproq unumdorligi	Firtility soil	Плодородия почвы	O‘simlikni butun vegetatsiya o‘suv davri davomida suv va oziq moddalari va boshqa omillar bilan to‘liq taminlash xususiyati tushuniladi.
Transpiratsiya	Transpiration	Транспирация	O‘simliklar ildizi yordamida tuproqdagi namni o‘zlashtirib, yer usti organlari orqali atmosferaga bug‘latishi
Transpiratsiya koeffitsienti	Coefficient of transpiration	Коеффициент транспирации	1 gr quruq modda hosil qilishi uchun sarflangan suv miqdori
Tuproqning nam sig‘imi	The moisture content of the soil	Влагоёмкость почвы	Tuproqning malum miqdorda o‘ziga suv singdirish va ushlab turish qobiliyati
Maksimal gigroskopik nam sig‘imi	The maximum hygroscopic moisture content of the soil	Максимальная гигроскопическая влагоёмкость почвы	Tuproq zarrachalari molekulalarining tortish kuchi natijasida uning sirtida ushlanib turgan suv
Kapillyar nam sig‘imi	The capillary water capacity of soil	Капиллярная влагоёмкость почвы	Tuproqning kapillyar g‘ovaklarida ushlanib turgan suv miqdori
To‘liq nam sig‘imi	Total moisture content of the soil	Польная влагоёмкость почвы	Tuproqning kapillyar va nokapillyar g‘ovaklari suv bilan tuyinishi
Dala nam sig‘imi	Field capacity of the soil	Полевая влагоёмкость почвы	Tuproq kapillyarlarida uzoq muddat saqlanadigan suv miqdori
Tuproqning suv o‘tkazuvchanligi	Vodopronitsaemosti soil	Водапроинцаемость почвы	Tuproqning ma’lum vaqt ichida yuqoridan qo‘yi qatlamlarga suvni o‘tkazish qobiliyati
Tuproqning suv ko‘tarish qobiliyat	Vadapalani ability of the soil	Водаподёмной способност почвы	Tuproqning kapillyar kuchlar tasirida suvni pastdan yuqoriga ko‘tarish xossasi
Makroelementlar	Macronutrients	Макроэлементы	Tuproq tarkibidagi oziqa elementlari azot, fosfor, kaliy, kaltsiy, magniy, kabi elementlar
Mikroelementlar	Traceelements	Микроэлементы	Tuproq tarkibidagi bor, mis, temir rux, marganets, kobalt, molibden kabi elementlar

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