

Yuqori qoplama ostida "issiqlik izolyatsiyalangan zamin tizimini" joylashtirish orqali siz qishki bog'da barqaror havo haroratini saqlashni nazorat qilishni sezilarli darajada soddalashtirishingiz mumkin. Pechni isitish - muqobil xom ashyolardan foydalanish imkoniyati. Pechka dizayni bog'ga o'ziga xos lazzat bag'ishlaydi. Shu bilan birga, issiqlikning notekis taqsimlanishi kuzatilishi mumkin, pechka yuqori yong'in xavfi tufayli diqqat bilan e'tibor talab qiladi. Bog'dagi er isitish dizayni, o'rnatish va ulanishda mashaqqatli. O'rnatish bog'ni tartibga solishdan oldin amalga oshirilishi kerak. Tizim bog'da optimal issiqlik rejimini yaratishga imkon beradi, ildizlarning rivojlanishiga yordam beradi.

Namlikka bo'lgan ehtiyojga qarab turli xil sug'orish rejimlaridan foydalangan holda, avtomatik sug'orish imkonini beruvchi juda ko'p turli xil sug'orish tizimlari mavjud. Eng mashhuri avtomatik. Bu teshilgan shlang bo'lib, u orqali sug'orish dozalanadi. Suv faqat o'simliklarning ildizlariga kiradi va maxsus sensorlar tuproqdagi namlik darajasini nazorat qilish imkonini beradi. Vegetativ qismini sug'orishni talab qiladigan suvni yaxshi ko'radigan o'simliklar uchun maxsus favvoralar o'rnatiladi. Qurilmalar bir vaqtning o'zida havoni namlaydi va bog'ning bezaklari bo'lib xizmat qiladi. Haddan tashqari suv jihozlangan drenaj tizimidan o'tishi kerak. Sovuq mavsumda va bulutli ob-havo sharoitida o'simliklar quyosh nurining etishmasligini boshdan kechiradi, bu ularning o'sishiga salbiy ta'sir qiladi va qishki bog'da qo'shimcha yoritishni o'rnatishni talab qiladi.

O'simliklar quyosh nuri va issiqlikning etishmasligi va haddan tashqari ko'pligidan aziyat chekishi mumkin, ayniqsa issiq havoda. Yoz vaqti. Buning uchun quyosh nurlaridan himoya vositalarini ixtiro qildi. Yorug'likning 40% ni blokirovka qilishga qodir pardalar va pardalar ichki himoyani ta'minlaydi. Ular mato, plastmassa, bambuk yoki metall qotishmalaridan tayyorlangan. Tentlar va avizolar ko'rinishidagi tashqi himoya yorug'likning 90% gacha kirib borishini oldini oladi. Ular aks ettiruvchi matodan qilingan. Ushbu himoya, shuningdek, devorlarning haddan tashqari qizib ketishining oldini oladilish, yoritish va sug'orish bilan bir qatorda siz yuqori sifatli tuproqqa g'amxo'rlik qilishingiz, uning etarli darajada urug'lantirilishi va kislorod bilan boyitilganligini ta'minlashingiz kerak. Maxsus tuproq-yog'ochli aralashmalardan foydalanish yaxshidir.

Xususiy uyda qishgi bog' uchun o'simliklarni tanlashda nafaqat ta'mga, balki turli xil turlar va navlarning birgalikda yashash qobiliyatiga ham e'tibor qaratish lozim. Issiqxonaning kattaligi, dizayni va joylashuvidan qat'i nazar, xususiy uyda qishki bog' uchun ranglarning kombinatsiyasi yaxshi tuzilgan kompozitsiyaga ega bo'lishi kerak. Uyning issiqxonasi gullarni o'simliklarning doimiy mavjudligini nazarda tutadi, shuning uchun tajribali paxtakorlar o'simliklar yilning vaqtiga qarab ekilgan. Qishda ular primrose, Kalanchoe, za'faron va lolalarni afzal ko'radilar. Bahor issiqligining kelishi bilan qo'shimcha ravishda sümbüller, zambaklar, hidrangealar, pelargoniumlar, astilbes va shisanthus ekiladi. Yozda bir bulbous o'simlik boshqasi bilan almashtiriladi.

Sharq va Osiyo zambaklar, begonias, zinnias, perillas, vincha, salphia, echinacea yaxshi o'sadi. Kuz - siklamen, kokiya, gomphen, xrizantema davri. Ushbu yondashuv bilan ekzotik gullar qishgi bog'da butun yil davomida xushbo'y bo'ladi. Sevishganlar qishki bog

'uchun ekzotik, tropik o'simliklarni tanlaydi, rezavorlar, mevali mitti daraxtlar. Bog 'uchun mashhur o'simliklar - qulupnay va yovvoyi qulupnay, har xil turdagi dekorativ gullar. Uydagi qishki bog' favvora bilan jihozlangan bo'lsa, u zambaklar bilan bezatilgan. Orkide eng inij va g'ayrioddiy go'zal issiqxona gullaridan biridir. Ular kvartiraning yoki xususiy uyning bog'ida haqiqiy chakalakzorlarni yaratadilar. Kaktuslar va palma daraxtlari, mitti ignabargli daraxtlar qishgi bog'lar egalari orasida ham talab mavjud.

Yil davomida gul paxtakorlari qishki bog' uchun ba'zi o'simliklarni boshqalar bilan almashtiradilar, gullaydiganlar.

Yanvar kalanchoe, primrose

fevral kalanchoe, za'faron, lolalar, muscari, sümbül

Mart za'faron, lolalar, sümbül, zambaklar, kalanchoe

aprel zambaklar, gortenziyalar, zambaklar, za'faron, lolalar, sümbül, pelargoniumlar

may pelargoniumlar, Osiyo zambaklar, sharqona zambaklar, astilb, shizantus

iyun sharqona zambaklar, begoniyalar, gipsofila

iyul Tuberous begonias, Blue Salvia, Astilbe, Celosia, Gomphrena, Veronika, Rudbeckia, Zinnia

avgust zinniya, perilla, vincha, rudbekiya, o'tlar namoyishi, ko'k salvia, echinasya,

sentyabr siklamen, shasta romashka, gomfrena, zinniya, vincha, begonias

oktyabr siklamen, xrizantema

noyabr xrizantema, Rojdestvo kaktuslari, manzarali qalampir

dekabr ipak eman

Gullar yordamida ular qulay bog' muhitini yaratadilar, umuman olganda qishki bog'lar xonodonda tashkil qilish inson kayfiyatini hamda sog'lom muhitni shakllantiradi unda siz qo'lingizda kitob va issiq kofe yoki choy bilan dam olishingiz mumkin. Siz o'z uyingizda qishda ham turli xil gullar o'stirishingiz mumkin, kam harajatlar bilan.

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THE USE OF PHOTOMETRY IN THE PROCESSES OF ILLUMINATION OF REPRESENTING OBJECTS

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Annotation: *Photometry, a branch of applied physics concerned with the measurement of light. In terms of photometry, light is radiation capable of producing a sensation of brightness when exposed to the human eye. This feeling is caused by radiation with wavelengths from ~ 0.38 to $\sim 0.78 \mu\text{m}$, with the brightest being radiation with a wavelength of approx. $0.555 \mu\text{m}$ (yellow-green). Since the sensitivity of the eye to different wavelengths varies from person to person, a number of conventions are accepted in photometry. In 1931, the International Commission on Illumination (CIE) introduced the concept of a "standard observer" as a kind of average for people with normal perception. This CIE standard is nothing more than a table of values for the relative luminous efficiency of radiation with wavelengths in the range from 0.380 to 0.780 microns every 0.001 microns. On fig. 1 shows a graph constructed according to this table, and it shows the intervals of wavelengths corresponding to the colors of the solar spectrum. Luminance measured according to the CIE standard is called photometric luminance or simply luminance.*

Annotatsiya: *Fotometriya, amaliy fizikaning yorug'likni o'lchash bilan bog'liq bo'limi. Fotometriya nuqtai nazaridan yorug'lik - bu inson ko'ziga ta'sir qilganda yorqinlik hissi yaratishga qodir radiatsiya hisoblanadi. Bu tuyg'u to'lqin uzunligi $\sim 0,38$ dan $\sim 0,78$ mkm gacha bo'lgan nurlanishdan kelib chiqadi, eng yorqini to'lqin uzunligi taxminan bo'lgan nurlanishdir. $0,555$ mkm (sariq-yashil). Ko'zning turli to'lqin uzunliklariga nisbatan sezgirligi odamdan odamga farq qilganligi sababli, fotometriyada bir qator konventsional qabul qilinadi. 1931 yilda Xalqaro yoritish komissiyasi (CIE) "standart kuzatuvchi" tushunchasini normal idrok etuvchi odamlar uchun o'rtacha ko'rsatkich sifatida kiritdi. Ushbu CIE standarti har $0,001$ mikron uchun $0,380$ dan $0,780$ mikrongacha bo'lgan to'lqin uzunliklari bilan nurlanishning nisbiy yorug'lik samaradorligi uchun qiymatlar jadvalidan boshqa narsa emas. Shaklda. 1da ushbu jadvalga muvofiq tuzilgan grafik ko'rsatilgan va u quyosh spektrining ranglariga mos keladigan to'lqin uzunliklarining intervallarini ko'rsatadi. CIE standarti bo'yicha o'lchangan yorqinlik fotometrik yorug'lik yoki oddiygina yorqinlik deb ataladi.*

Аннотация: *Фотометрия, раздел прикладной физики, занимающийся измерениями света. С точки зрения фотометрии, свет – это излучение, способное вызывать ощущение яркости при воздействии на человеческий глаз. Такое*

ощущение вызывает излучение с длинами волн от $\sim 0,38$ до $\sim 0,78$ мкм, причем самым ярким представляется излучение с длиной волны ок. 0,555 мкм (желто-зеленого цвета). Поскольку чувствительность глаза к разным длинам волн у людей неодинакова, в фотометрии принят ряд условностей. В 1931 Международная комиссия по освещению (МКО) ввела понятие «стандартного наблюдателя» как некоего среднего для людей с нормальным восприятием. Этот эталон МКО – не что иное, как таблица значений относительной световой эффективности излучения с длинами волн в диапазоне от 0,380 до 0,780 мкм через каждые 0,001 мкм. На рис. 1 представлен график, построенный по данным этой таблицы, причем на нем указаны интервалы длин волн, соответствующие цветам солнечного спектра. Яркость, измеренная в соответствии с эталоном МКО, называется фотометрической яркостью или просто яркостью.

Key words: Photometry, light, photomultiplier, illuminator.

Kalit so'zlar: Fotometriya, yorug'lik, fotoko'paytirgich, yoritgich.

Ключевые слова: Фотометрия, свет, фотоумножитель, осветитель.

Photometry is a branch of optics that studies methods for measuring light when it interacts with matter, as well as technical means designed to implement these methods.

In accordance with the classification given in Chapter 4, photometry methods are distinguished when light passes through a substance and when light is reflected from the surface of a substance.

In photometry, integral radiation is used. Studying the methods of photometry allows you to understand spectrophotometry.

Reflected light research

The methods consist of comparing the light reflected from the test specimen with the light reflected from the whiteness standard. Comparison of light fluxes is carried out visually (subjective method) and with the help of photodetectors (objective method). Devices for light measurements of the first type are called visual, or visual, photometers, and the second type - physical photometers. A variety of physical photometers are photoelectric photometers - devices in which a physical receiver is used as a radiation receiver, the operation of which is based on the photoelectric effect (photomultiplier, photocell, etc.).

As a whiteness standard, an MC20 milk glass plate or pressed barium sulfate is used.

An important condition in the manufacture of measurements is the exclusion of specular or glare reflection, which, as follows from Chap. 2, manifests itself when the angles of reflection and incidence are equal. To do this, various schemes for combining the angles of the incident and reflected (measured) light fluxes are used. Angles are measured relative to the normal to the surface: $45^\circ/0^\circ$; $0^\circ/45^\circ$, etc. For example, $45^\circ/0^\circ$ means incident light flux at an angle of 45° , reflected, directed along the normal.

Photometry in reflected light is used to determine the whiteness of papers on instruments - universal photometers, which are an example of visual photometers.

Determination of whiteness on a universal visual photometer FM-56 (Fig. 7.1). Measurement of the reflection coefficient of white surfaces is carried out behind a blue light filter No. 11 of the M-47 brand, which is included in the instrument kit. A diffuse reflective barium sulfate plate is used as a reference. A standard is placed on the left table of the instrument, and an object under study measuring 50 x 50 mm is placed on the right table. By rotating the drums, 3 photometers fully open the left and right diaphragms, independent of each other. Turn on the illuminator 2 and begin to determine the reflection coefficient. Beams of light from the illuminator fall on the left reference plate and the right object under study, are reflected from them and illuminate the comparison field, visualized in the eyepiece 6 in the form of a circle consisting of two halves. The field corresponding to the standard is illuminated brighter than the field corresponding to the object under study. Rotating the left drum, reduce the aperture above the standard to equalize the brightness of the comparison fields observed through the eyepiece. According to the scale applied to the drum, the value corresponding to the degree of diaphragm opening is counted. Calculate the value of the reflection coefficient corresponding to whiteness, according to the formula where R_{ob} is the reflection coefficient of the object of study, %; R_{et} - the reflection coefficient of the standard specified in the passport, %; S_{o6} - the degree of aperture opening on the right drum (at full opening - 100%), %; S_{3T} - the degree of aperture opening on the left drum, %.

Scheme of a universal photometer

Fig. 7.1. Scheme of a universal photometer:

1 - the object under study; 2 - illuminator; 3 - drum with a scale indicating the degree of aperture opening; 4 - diaphragm; 5 - revolving disk with light filters; 6 - eyepiece.

To improve accuracy, whiteness is expressed as the arithmetic mean of five measurements.

Determination of reflection coefficients of colored objects.

The universal photometer allows you to study colored objects behind three light filters: red, green and blue. To achieve greater accuracy, eight filters can be used, each of which transmits radiation in the 40 nm range, and together they cover the entire visible range.

In the case when it is necessary to determine the optical density of the surface of an object, reflected light densitometers are used. Unlike universal photometers, they are physical photometers and give an objective quantitative characteristic - optical density. In densitometers, the same schemes for combining the angles of the incident and reflected (measured) light fluxes are used as in photometers.

PHOTOMETRY IN TRANSMITTED LIGHT

In transmitted light, densitometry is predominantly used - the measurement of optical density using densitometers. The light source and photodetector are arranged