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FEATURES OF FORMATION ABOVEGROUND BIOMASS PRIMULA VERIS L. S. L.

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Sandwiched plate and flowering stems of a plant characteristic parameters play an essential role in life as a species, and the general population. By collectively plant organs can assess growth, vitality and state populations phytomass accumulation of the studied species and others. In the present work processed morphometric parameters of the plant, the dependence of the mass of Primula veris L. s. l. the parameters of leaf blade and flowering stems and proposed a formula for its determination.

Cowslip, leaf blade, flowering stems, parameters, morphometric parameters, weight

In the process of structural and functional organization of grass substantial role assigned to plant organisms that make up the groups. Determination of biomass and leaf plates parameters enabling to assess these vital processes in phytocenoses intensity streams of energy production and decomposition of organic matter, binding and release of organic compounds, photosynthesis, respiration and transpiration [3, 5, 7].

Leaf blade - this assimilationist body that performs various functions vital for plants: formation and laying plastic materials, gas exchange with the atmosphere, clean the air of dust and harmful gases. Growth and development of leaf plates accompanied by intensive course of photosynthesis. Floral stem - a phytocoenotic unit, morphological and morphometric analysis which characterizes the process of reproduction and propagation determines favorable conditions for the growth and development of species and populations as a whole [1, 4, 9].

Morphometric criteria for individuals (parameters of leaf blade and flowering shoots) are important for forecasting the population, and their comparative evaluation, the different between a forest typology circumstances, decides environmental needs type (in relation to light, humidity and soil) [1, 2, 6 8].

The purpose of research - to identify the dimensional characteristics of leaf blade (length and width) and a height of flowering stems in different habitats. Set dependence on biomass aboveground morphometric parameters of Primula veris L.

Materials and methods of research. To achieve this goal draws permanent sample plots other than each other ecological factors: soil moisture and trofnistyu, zimknutistyu upper tiers of the forest.

Field studies were carried out using forestry-taksatsiynyh, botanical methods. The data worked out using standard techniques (Zaitsev, 1990) and software packages Microsoft Excel-2010, StatSoft, Statistica-6. For factual material obtained using correlation analysis.

Results. Research conducted mass primrose on the results of measurements of leaf plates (1545 pcs.) And flowering shoots (212 pcs.).

Based on the correlation matrix between where the stem height, leaf size and their weight, there is a close relationship respectively r = 0,86 and 0,82, weight primrose can be described by the following formula:

$$M_{заг} = M_{ст} + M_{лист.}, \qquad (1)$$

where: $M_{заг}$ – total mass of plants, g; $M_{ст}$ – mass flowering stems, g; $M_{ст}$ – leaf weight, g.

The mass of the stem is well described by the following formula:

$$M_{ст} = a_1 \cdot \left(1 - e^{-(b_1 \cdot L_{ст})}\right)^{c_1} + \varepsilon, \qquad (2)$$

where: $L_{ст}$ – length of inflorescence stems, mm; a_1, b_1, c_1 – coefficients of equation.

Weight letter described by the following formula:

$$M_{лист.} = n \cdot \left\{a_2 \cdot \left(1 - e^{-(b_2 \cdot L_{лист.})}\right) \cdot \left(1 - e^{-(c_2 \cdot B_{лист.})}\right)\right\} + \varepsilon, \qquad (3)$$

where: n – number of leaves, pieces.; $L_{лист}$ – leaf length, mm; $B_{лист}$ – leaf length, mm; a_2, b_2, c_2, – coefficients of (Table. 1)

1. The coefficients equation to calculate the mass of plants

Coefficients	The length of the stem, mm	Settings sheet, mm
a	4,9966	4,0936
b	0,0032	-0,001206
c	2,0733	-0,002581

For a more complete analysis models is additional statistical criteria between measured and model values, namely:

- the amount of deviation between the actual values and model who has to go 0;
- coefficient of determination (R2) linear relation between the actual values and model, where the values of free factor should go to 0 (= 0) and slope factor under 1 (= 1);

- the adequacy of the model - convergence properties (features, parameters, characteristics) model and the properties of the object, which is calculated by the following formula □author□□

$$\theta = 1 - \frac{\sum\left(y - \tilde{Y}\right)^2}{\sum\left(y - \bar{Y}\right)^2}, \qquad (4)$$

where: θ *– adequacy model; y – the actual value of;* $\tilde{Y}$ *– the value model;* $\bar{Y}$ - The average value.

The adequacy of the model can take values from -□ value to 1. 1 model describes a given pattern between the actual and the modal values; the value 0 - model is slightly worse than the average of the value; and the negative value model is much worse than average and is a systematic error.

The adequacy of the proposed equations for estimation of stem and leaf weight shown in Fig. 1-4.

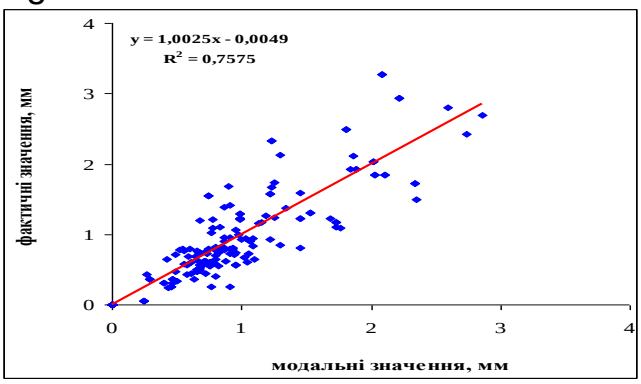

Fig. 1. Dependence of the mass of the stem between theoretical and actual values

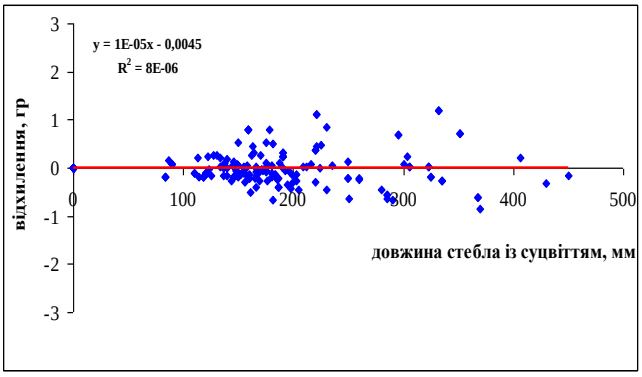

Fig. 2. Dependence of the difference between the actual mass of stems and theoretical values

How accurate equations describing the mass of stems show Fig. 1 and 2. The adequacy of the model () is 0.758; free rate and tends to 0 (0.0049), and the coefficient b - 1 (1.0025). The maximum difference between theoretical and actual values of maximum 0.85 grams, corresponding to 4.7%, the amount of deviation between the actual and theoretical values equal to - 0.48, and the value = -0.0026. Consequently,

the proposed equation adequately describes the actual signs masses stems.

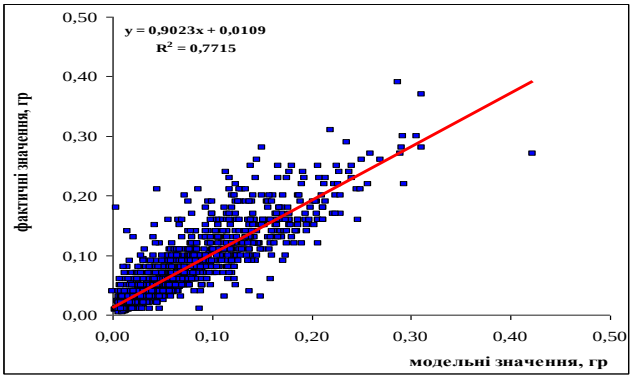

Fig. 3. Dependence leaf mass between the theoretical and actual values

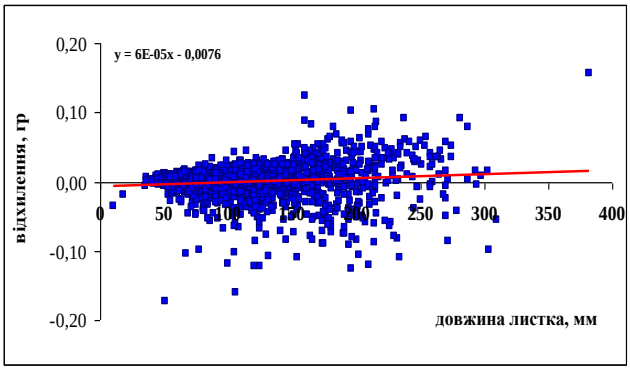

Fig. 4. Dependence leaf mass difference between the actual and theoretical values

Established that the adequacy of the model () is equal to 0.772 free rate and tends to 0 (0.0109), and the coefficient b - 1 (0.9023) (Fig. 3, 4). The maximum difference between theoretical and actual values of 0.18 grams, corresponding to 2.4%, the amount of deviation between the actual and theoretical values equal to - 7.10, and the value = -0.0046. Consequently, the proposed equation adequately describes the actual signs of leaf mass.

Conclusions. Based on our empirical equations adequately describe the proposed stem and leaf mass the size of the plant in fresh-cut state. Mass plants in air-dry plant mass equal to freshly state multiplied by the percentage of moisture

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Листовая пластинка и цветоносный стебель с характерными для растительного организма параметрами играют существенную роль в жизнедеятельности как вида, так и популяции в целом. По совокупным признакам растительных органов можно оценивать рост, жизнеспособность и состояние популяций, накопления фитомассы изучаемого вида и др. В представленной работе обработано морфометрические показатели растительных органов, установлена зависимость массы Primula veris L. s. l. от параметров листовой пластинки и цветоносного стебля и предложено формулу для ее определения.

Первоцвет весенний, листовая пластинка, цветоносный стебель, параметры, морфометрические показатели, масса