

BIOMATHEMATICS PATTERNS OF LEAVES AND FRUITS COMPOSITION OF APPLE CULTIVARS

Key words: *biomathematics formula; botany; apple varieties; data subordination; sizes of DNA.*

Abstract

For the quantitative solution of biological problems among various methods of mathematical approach the preference is given to biomathematics formulas derived on the basis of data subordination of leaves and fruits of apple cultivars and evidence that living organisms are quantitatively unambiguous functional patterns. The paper presents biomathematics formulas reflecting the composition patterns of all morphological forms of leaves and fruits of apple cultivars in the phase of their complete formation. Newly discovered formulas are interderivable with the previously identified ones [11, 298-303], and linked together by permanent difference in length (l) and width (w) of registered forms of measurement in the expression $\pm n(l-d)/12$, allowing to combine the formulas into a single system. Existing quantitative relationship between the parameters of different parts of the apple tree (leaf, pericarp, heart and seed cavity) by the permanent difference $\pm n(l-d)/12$ provides a unique solution of biological problems to identify patterns of both same and opposite parts of the apple tree on the basis of interderivable formulas. The ratio of width and length arguments of the leaf, pericarp, heart, seed cavity (b/a) and the number (n) of permanent differences $\pm n(l-d)/12$ establish a hierarchical order of different morphological shapes (leaf – pericarp – heart – seed cavity) and at the same time show the quantitative transition from one quality to another. The ratio b/a and the number n in the expression $\pm n(l-d)/12$ is lower in vegetative parts and successively increases towards the reproductive organ - seed. Mathematical analyses of the biomathematics formulas showed the ratio which numerical values appear in the construction of the apple tree. The patterns of leaves and fruits composition of apple cultivars are due to the parameters of the apple tree DNA composition and are interderivable by the relevant biomathematics formulas. The irrational numbers $\pi, e, \sqrt{2}$ take an effective part in the construction of the apple tree and DNA.

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