SCIENCE

**Mathematical analysis of symmetrical constants in orchids**

What is the application of mathematics in orchids? Starting from the amazing Fibonacci´s succession and its great capacity to model and explain reality´s nature, this investigation validates the hypothesis of applying Fibonacci´s succession to different orchid species, *Odontoglossum, Phalaenopsis, Cattleya, Anguloa,* finding a proportionality pattern in the species, a symmetry *constant*  that define bilateral symmetries of the orchid species, becoming an input to determine quantitatively the flower´s degree of quality to guarantee export standards by developing an automatic learning algorithm.

The symmetry constant is given by the following equation: which is a mathematical ratio conceived depending upon the geometrical figure inferred from the flower symmetries. Most of orchids couple geometric figures as irregular pentagons or tetrahedrons, which are input for the measurement algorithm of the flower quality.

A proportionality pattern can be determined which tends to be 1,4; it is believed that theoretically can tend to be 1,612 (*maximum flower quality)* with a greater number of observations. With the results, the recognition and quality algorithm must be able of calculating a *symmetry* *constant*  by species and calculate a specific *symmetry constant* of the flower to be recognized with the purpose of validating the differences between looking for the following proportionality ratio ; in that manner a quality degree will be assigned to each symmetry variable, given by the error or difference between this hypothetical ratio that the algorithm will assume. This development is a help to classification the flower´s in ratio with its degree of quality.