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Experimental Design for Evaluation of Physiological Active Substances Administration on the Cherries Fruit Quality

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Abstract: Fruit's quality reflects the tree's health, which has most of its biochemical processes concentrated in the leaves. Thus, if we administrate some biologic-active substances during the phenophase of fruit growth and development, we could evaluate the physiological and metabolically effects of some key processes, considering laboratory assays from leaves and fruits. The administration of some bio-stimulators and chemicals during the phenophase of cherry growth and development affects the cherry's quality and production, processes which could be evaluated by different laboratory tests of oxidative stress assessment.

• Experimental design proposal

- the samples were collected from trees of a cherry orchards,
- from two different locations in Zadar Country from Croatia:
 - ✓ Ninski Stanovi
 - ✓ Murvica
- administration of some bio-stimulator:
 - ✓ CaO, proline, salicylic acid
 - ✓ biostimulator based on *Ascophyllum nodosum* L. extract
- laboratory tests:
 - total content of polyphenols
 - Chlorophyll and carotene

Bio-stimulators and Cherries quality

Bio-stimulators modify:

- ✓ the metabolism of tree (cherry tree) and fruits (cherries)
- ✓ leaf surface area (which is the seat of the photosynthetic processes that ensure both the development and the nutritional quality of the fruit)
- ✓ net photosynthetic productivity with a direct impact on both quality and quantity

• Conclusions

- administration of bio-stimulators to cherry orchards can increase: cherry production, resistance to pests, and cherry quality, but also the nutrient composition can be stimulated to concentrate more carbohydrates, mineral salts, vitamins, and enzymes, along with biologically active substances, such as antioxidants natural.
- the experimental designs allow to obtain the optimum proportion and combination of some bio-stimulators in order to obtain the best quality and quantity production.

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