

Soil sampling, high technology, role in fruits storage

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Abstract

Geographical position of the meadow, climatical conditions of vegetation's period, influences chemical constituencies, tasting qualities, size, color and resistance at storage, last but not least. Quality and capacity of storage of the fruits are depends of soil's type, humidity, content of mineral salts. Apples of autumn- winter analyzed by us belong to group's fruit with seeds which ripen after harvest. Their ripeness is finalized during the storage. This is influenced of the presence of basic minerals, that: Na, K, P, B and Mg. The insufficiency of basic mineral in soil, reduce the storage time. Balances supply is dependent of soil's type influences the resistance at their storage. In this work, we started with an analyze of soil, because a good soil, give satisfactory harvest which can be storage for a longer period of time. The apples were harvested from Insuratei –Braila and Focsani –Vrancea. Apples, was storage at the temperature of 1-2°C, conditions of refrigeration and low temperature associated with controlled atmosphere. Soil sampling established exactly where and how are found the fertilizers in soil.

Keywords: Soil's analyze, soil concentrate, preservation, storage period, product's quality.

1. Introduction

The apples have an elevated content of water, 84-87%, up to one hundred percent substance including sugars, proteins, pectin substances, vitamins, organics acids, mineral salts. Vitamins are represented by B1, B2, PP, C. Mineral salts representatives are: Ca, Na, Fe, Mg, Si, Cl, Br. All these elements together with others important apple's components, make apple a fruit with therapeutically properties. Apples are used like: refreshing digestives, diuretics, gastric protectors, antiseptics, stimulants, keeping tissues youth. These fruits are used to prevent physical and intellectual asthenia, overworking, burden, anemia, sleeplessness, nervousness, intestinal infection and others.

All these properties explain why apple is one of the most frequent consumed fruit. Our themes to refer at possibilities of apple's keep for along time, until 220 days, without weight decrease and preserving all his organoleptics properties

2. Materials and methods

Our study is related to Red Jonathan type, apples harvested in two different areas- Focsani (Vrancea) and Insuratei (Braila).

We made a precise soil sampling and analyzed in targeted regions, Focsani and Insuratei, for determinate soil content of elements and microelements. Soil's analyses in combination with fruits demands of elements and microelements offers us information concerning plants fertilization. Depending of fertilization technologies, we can improve storage period. Apples harvested from studied soil areas, were preserved in two situation:

- temperature 1- 2°C, refrigerating condition;
- low temperature and controlled atmosphere.

Same type of apples, harvested from different regions, preserved in various conditions, offers us different results, concerning C vitamin variation content and acidity variation content.

3. Results and Discussions

We made 3C vitamin content determination, once per month, in three months. Identification and dosing C vitamin was determinate through iodometer method.

C vitamin content was determinate by us through sample's reaction, in presence of HCl and starch, with KI and titration with KIO₃, first determination and two estimations through sample's reaction with 2-nitroaniline with obtain of complex ascorbic acid and 2-nitroaniline; last values readied at 540 nm.

Acidity content determination was made once a month, in three months through titrimetric method. We used NaOH in presence the phenoftaleine, for determinate percent of the malic and tartaric acid.

Soil sampling, soil's analyze impose to elaborate of soil's maps which indicate the requirement of the ameliorative fertilization. In precursory period of the vegetation, we don't know soil's characteristics. Soil's analyze explain the differences between apples, concerning appearance, apples obtained in two different zones. Concerning apple growing, Focsani soil is better than Insuratei. Strong winds, in different year's period, influence relief's stability where dunes of sand at Insuratei exist.

Focsani is a zone with neuter pH, with sandy clay, with medium hummus and little content in salts.

We determinate the variation for C vitamin and acidity, for apples resulted from different zones, Insuratei and Focsani.

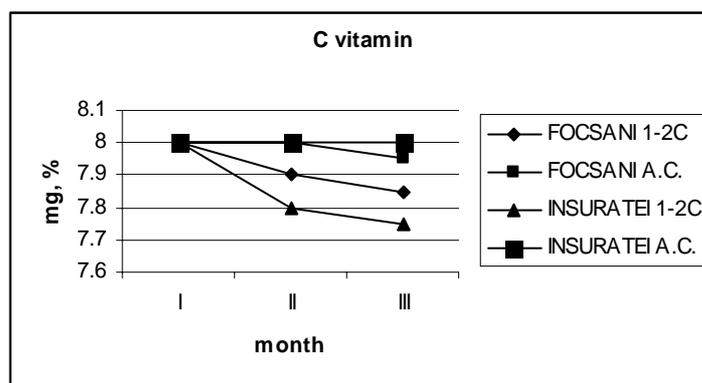


Figure 1.

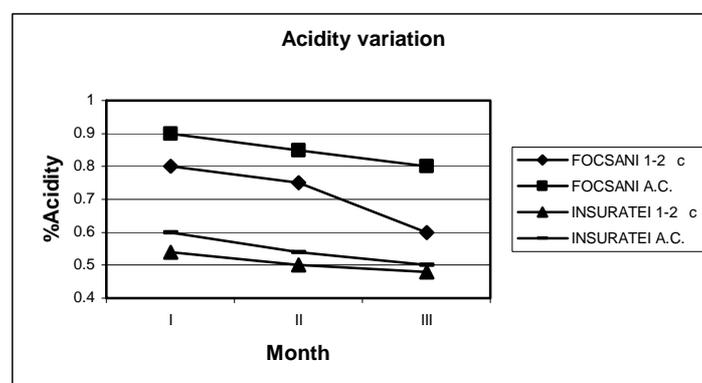


Figure 2.

4. Conclusion

We observed that apples derived of different zones, have a different appearance. In Focsani, soil is better than soil of Insuratei where require a permanent ameliorative fertilization.



Figure 3.

Different zones of harvest give different chemical composition.

Controlled atmosphere keeps the apples, respective their physico-chemical properties much better.

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