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METHOD OF IDENTIFYING SOUR ORANGE ROOTSTOCK

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My invention relates to a method of identifying sour orange rootstock. Virtually all orange trees are grown by budding the desired type of orange tree on a suitable type of rootstock. Among the varieties of rootstock which have been used extensively is one known as "sour orange" rootstock. Many orange trees suffer from a disease known as "quick decline," the cause of which is a virus.

Orange trees budded on sour orange rootstock usually are not tolerant to this disease. Several attempts have been made to identify rootstocks so as to avoid use of sour orange rootstock in the budding of orange trees or to determine the rootstock after budding and after development of the orange tree.

However, none of these attempts have been sufficiently positive or readily carried out; therefore, a primary object of my invention is to provide a method of identifying sour orange rootstock which is both simple of execution and dependable in result.

A further object is to provide a method of identifying sour orange rootstock which utilizes the technique of paper chromatography and the observation of the chromatic record under ultra-violet light.

In the exercise of my method, a small sample of the roostock, for example, a fresh piece of bark preferably full thickness and about one-eighth inch square is placed cambium side down on a piece of filter paper or chromatograph paper and struck a sharp blow to make a moist spot about three-sixteenths of an inch in diameter. Preferably several samples are used to be sure of a characteristic result.

Alternatively an extract may be made of the bark sample by finely dividing about a three-fourths inch square of the full bark and placing it in about five milliliters of ethyl alcohol for twelve hours. Or a mixture of normal butyl alcohol (four parts), glacial acetic acid (one part), and distilled water (five parts) may be used. Before applying the material to the paper, the mixture is allowed to stand. The mixture separates into an upper organic layer and a lower aqueous layer. Only the upper layer is used.

If the extract is used, small drops are applied to the filter paper.

The samples or drops of extract are placed near the lower margin of the filter paper. The lower margin of the paper is placed in a solvent solution composed of normal butyl alcohol (four parts), glacial acetic acid (one part) and distilled water (five parts). This is

preferably done in a closed vessel. The solvent is allowed to rise about six or seven inches in the filter paper.

The sheet is then removed and allowed to dry. It is sprayed with a solution of ninhydrin and dried again. There will appear on the filter paper in a few hours a column, or chromatogram, for each spot of root-material that is used.

After the paper is sprayed and dried it is viewed under an ultra-violet lamp. Tests have indicated that a lamp having strong radiations in the range of 3000 angstrom units is preferable. If the rootstock is that of the sour orange variety a characteristic yellowish, fluorescent, flame-like section will be observable located about forty to fifty percent of the distance between the lower and upper extremities of the chromatograph found on the paper.

By noting this characteristic flame-like section one can determine that the sample is that of a sour orange rootstock.

Having thus described certain embodiments and applications of my invention, I do not desire to be limited thereto, but intend to claim all novelty inherent in the appended claims.

I claim:

1. A method of distinguishing sour orange rootstock, the steps comprising: preparing an extract of a sample of rootstock under investigation by leaching said sample with a solvent selected from the group consisting of ethyl alcohol and normal butyl alcohol; applying the extract to a porous paper; wetting said paper with a solution consisting of 4 parts N-butyl alcohol, 1 part glacial acetic acid and 5 parts distilled water; drying said paper; spraying said paper with ninhydrin; redrying said paper; and subjecting the dried paper to the action of an ultra-violet light having radiations in the range of 3000 angstrom units to obtain a section indicative of rootstock of the sour orange variety.

2. A method of distinguishing sour orange rootstock, the steps comprising: obtaining an extract of a sample of rootstock under investigation; applying the extract to a porous paper; wetting said paper with a solution consisting of 4 parts N-butyl alcohol, 1 part glacial acetic acid and 5 parts distilled water; drying said paper; spraying said paper with ninhydrin; redrying said paper; and subjecting the dried paper to the action of an ultraviolet light to obtain a section indicative of rootstock of the sour orange variety.

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