CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
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Project Title
How Differing Light Wavelengths Affect the Rate of Fruit Ripening

Abstract

Objectives/Goals

If fruit ripening can be altered in a natural way, such as exposure to only certain light wavelengths, then harmful ripening techniques, such as the use of chemicals, will become less useful. How certain wavelengths affect fruits and the rate at which they ripen was tested.

To test how specific wavelengths alter ripening rates, fruit was left to ripen under red light, blue light, purple light, and no light. A refractometer was used to more accurately determine the degree of ripeness for each fruit. A refractometer measure Brix or sugar weight # the reading help monitor the progress of ripening.

Methods/Materials

1.Test refractometer using a banana, mango, and grape bunch
2.Place the fruits in individual plastic bags
3.Set up # Place each light filter on a full spectrum light, the full spectrum lights should point towards the beakers of water, and the fruits placed besides the beakers (the light is not directly in contact with the fruits but reflected by the beaker of water)
4.1 banana, 1 mango, and 1 grape bunch should be placed under the red light, under the blue light, and under the purple light
5.1 banana, 1 mango, and 1 grape bunch should be placed in no light, away from the full spectrum lights
6.Each of the tested fruits will be placed in the same room to reduce variables such as temperature changes and access to outside light (because the fruits are all in a windowless room, the fruits will be exposed to little outside light.)
7.The fruits will be tested, using the refractometer, on day 1, followed by day 3, day 6, day 9, and day 12 at exactly 5:00pm each test day
8.Record observations on each test day

5 unripe bananas, 5 unripe mangos, 5 unripe grape bunches, 15 sealable plastic bags, large enough to contain fruit, Table, Knife for cutting fruit (for refractometer readings), Refractometer, Distilled Water (used for refractometer), 3 Large Beakers of Water, 3 Full Spectrum Lights, 3 Light Filters (1 red, 1 blue, 1 purple).

Conclusions/Discussion

The differing wavelengths tested each had a specific affect on the fruit. The red light sped up the ripening process the most. When under the red light, the percent brix of the fruits increased the fastest compared to

Summary Statement

Exposure to certain light wavelengths should alter the rate at which fruit ripens.

Help Received