

# Project: Are Plants Music Lovers?

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Science Achievement Awards Entry

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[Can music help plants grow? If your answer is yes, which kind of music gives the best results? Do these questions sound silly to you? They did to Marcia Riley of Old Massion Junior High School, Kansas City, Kansas. Marcia received the idea for her project from a science article pointed out to her by her science teacher, Leonard Molotsky. She did not find the idea of plants being "music lovers" very convincing, so she decided to find out for herself whether music could have any effect on plant growth.]

**T**O prepare for my experiment I got four phonograph records (33 1/3 speed) in four different fields of music. The first was "jazz," the second was "Dixieland," the third was "classical," and the fourth was a "sound effects" record.

## PROCEDURE

The first four groups of plants were exposed to music, while the fifth was not. There were 10 plants in each group.

Bean plants were used in the experiment. All the beans were grown in glass jars (mayonnaise jars are excellent) with a piece of blotting paper in each. The beans were wedged between the glass of the jar and the blotting paper (*see diagram*). The paper was soaked with water each day to keep the beans moist. If you fail to do this the plants will not survive. The jars were kept in a window where they received good sunlight.

## Light Sensitivities of the Earthworm

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violent reactions. They crawled rapidly, as if searching for a burrow. On a few occasions, the worms raised their anterior ends and tossed them from side to side. The reaction was instant.

There was little reaction when the

## TESTING

The plants were kept in almost complete silence except for being exposed to the music for one hour each day. They were then returned to the room where they were kept, and another group was brought out and similarly exposed to a different kind of music.

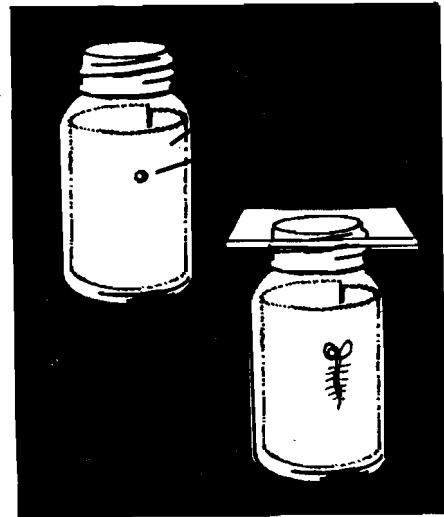
Every other day I measured the length of the leaf from where the stem goes into the leaf to the tip of the leaf, the width of the stem taken at the widest part of the stem, the number of leaves, the number of main roots, and the height of the plant taken from the tip of the longest root to the highest part of the plant. A meter stick and calipers were used for measurements.

Individual measurements of the plants in each group were recorded and totalled. I then averaged the measurements in various groups of plants. Three experiments were conducted, and the results came out approximately the same.

## RESULTS

Of the four groups of music tested, the "sound effects" record seemed to have the most marked effect on the increase of plant growth.

The first group of experiments yielded results which were quite difficult to accept, so I ran the exact test over again, just in case the results might have been purely coincidental. However, the second results came out almost the same as did the first. I ran one more experiment, and was further assured that my



Beans grew in jars. Blotting paper was soaked with water to keep beans moist.

results were accurate. The experiments lasted twelve days.

The classical music seemed also to affect the plants in a definitely marked way. The Dixieland was next and the jazz came in a poor fourth. These records were used: jazz—"Jazz Goes to College"; classical—Beethoven's "Emperor Concerto," performed by Robert Casadesus and the New York Philharmonic; Dixieland—"Lawrence Welk Plays Dixieland," by the Lawrence Welk Orchestra; sound effects—"Percussion in Hi Fi," by Dave Carolle.

[Marcia found that plants respond to certain types of music. Why don't you try out your record collection on your houseplants?]

sides were stimulated. When other parts of the body were illuminated, no effect was produced.

When I tried to draw some conclusions from my observations, I decided that the light must pass through the body of the earthworm. The cerebral ganglia (masses of nervous tissue) are located at the anterior or head end. Since the reactions at this point were most violent or instant, the light must

somehow excite the cerebral ganglia after it penetrates the skin.

[Nancy hopes to continue her work with earthworms by testing them with various colored lights. She also expects to study further the separation of paired worms when exposed to light. Why don't you set up your own project to shed some new "light" on earthworms, and see how they react?]