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The Effect of Low Power Microwaves on Plant Growth

To determine if microwaves have an effect on plants.

Mung beans were soaked for different length of time ranging from 0 to 24 hours before exposed to different period of low power microwave ranging from 0.5 minutes to 2.5 minutes. The treated mung beans were put on wet paper towel at room temperature to study the treatment effect on germination and early growth. All groups had the same three days in water. Germination rates were calculated and compared across soak time and microwave exposure time. Length of stem and root were measured and were fit with a linear model as a function of soak time and microwave exposure time.

First I combined those did not germinate or deformed into one category (hereafter called deformation) and analyzed the deformation rate. It was found that those groups with shorter soak time (p-value=0.0008) and longer exposure time (p-value<0.0001) have higher proportion of deformation rate. From linear regression models, stem length=1.16 -0.01*soak time-0.14*exposure time (cm); root length=2.28 + 0.005*soak time + 0.125*exposure time (cm). The p-value for soak time effect on stem length is <0.0001, the p-value for exposure effect on stem length is <0.0001. The p-value for soak time effect on stem length is 0.26, the p-value for exposure effect on stem length is 0.028.

1) shorter soak time and longer exposure time increases the proportion of deformation rate; 2) among those that germinated, longer soak time had only a negative effect on stem growth. Longer exposure inhibited the growth of stem but stimulated the growth of root.