Conclusions

After analyzing our data very carefully, we can come to some very interesting conclusions. The most interesting result of the experiment was the female to male ratio. With two female and two male fruit flies placed in every vial at the beginning of the experiment, we expected that the 1:1 ratio would remain constant throughout the duration of the experiment. However, as we observed on both 3/30/02 and 4/06/02, this was not nearly the case. On both observation days, we noticed that on average there were much more female flies than male flies in each of the coil categories.

Leading into the experiment, we hypothesized that living in an electromagnetic field would severely inhibit the reproducing capabilities of fruit flies. After performing our experiment, we can say with some certainty that this is not the case. Looking at all the raw data, we can see just how inconsistent our results were. For example, two of the yields from the 50-coil collection on 3/30/02 were abnormally large. These two vials contained 173 of the 216 total flies that were observed in all five of the vials. This means that the other three vials had just 43 total flies. Furthermore, just comparing the total flies in all five of the 20-coil vials (74) to the total flies in all five of the 50-coil vials (216) on 3/30/02, we see more inconsistency.

If we were to merely look at the totals of each coil category from both observation days, we would observe a slight pattern. Since the controls are considered the norms, both 5-coil totals are substantially larger than their respective control totals. This leads us to believe that the 5-coil environment is better suited to the reproduction of fruit flies than the no coil environment. Can we then proclaim that as the number of coils increases and thus, the greater the electromagnetic field, the better fruit flies reproduce? We cannot because something remarkable occurs in the next two coil categories. As we move from the 5-coil category to the 10-coil category, and on through the 20-coil category, the total number of flies gets progressively smaller. Finally, we get to the 50-coil environment. If our hypothesis is correct, the decreasing trend should continue. But, this is not the case. Both 50-coil environments are greater than their respective control environments. This shows how much variation there is in the reproduction of fruit flies, and causes us to reject our hypothesis.

To further demonstrate the inconsistency of our data, we will now look at the p-values we obtained by using the ANOVA tests. Only three of the 16 tests provided significant evidence that allowed us to reject our null hypothesis that states there is no difference in the reproduction of fruit flies living in an EMF and the flies not living in an EMF. This means that only three of the 16 tests provided results in favor of our original hypothesis that living in EMFs does affect the reproduction of flies. The percentage of these tests that supported our original hypothesis (.1875) does not provide nearly enough evidence to accept our original hypothesis.