Aim of Design of experiment

A statistical experiment in any field is performed to verify a particular hypothesis. For example, an agricultural experiment may be performed to verify the claim that a particular fertilizer has got the effect of increasing the yield of paddy. Here the quantity of the fertilizer used and the amount of yield are the two variables involved directly. They are called **experimental variables.**

Apart from these two, there are other variables such as the fertility of the soil, the quality of the seed used and the amount of rainfall which also affect the yield of paddy. Such variables are called **extraneous variables.**

The main **aim** of the design of experiments is to control the extraneous variables and hence to minimise the experimental error so that the results of the experiments could be attributed only to the experimental variables.

Assumptions in ANOVA

1. Each sample is taken as a random sample.
2. Each sample is independent of the other sample.
3. Populations are normal.
4. Variances of populations are equal.
5. The effect of various components and interactions are additive.