

BEST OF SUBJECT CATEGORY AWARD BOTANY – DELHI NATIONAL FAIR

Effect Of Darkness On Seed Germination

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The need of light for plant growth is well known. However, less emphasis has been laid on whether or not light has an effect on germination stage. If at all there is any effect, the present investigation has been undertaken to study the germination pattern in the seed samples of (1)Black-gram (2)Soya bean (3)Wheat (4)Rajma (5)Moong bean in light and dark

Some of the germination related physiological parameters, i.e. vigour index, germination percentage and dry weight accumulation (carbohydrates) were also calculated. Some interesting things happened during germination, i.e. cracking of seed coat, opening of cotyledons, emergence of radical and plumule, etc. The whole process is so quick that it enables us to watch each event.

Germination was conducted by soaking the germination paper towel for 4-5 hours and plated 10 seeds of each sample between the folds of the germination paper. Two sets were prepared, one kept in dark and the other kept in light. Their germination counts were recorded every day. Total viability of the seeds was calculated by counting the number of seeds germinated (with normal radical and plumule emergence). The root and shoot lengths, number of nodes, leaf expansion, etc. on the final day, i.e. 5th day were recorded to see the difference between dark and light germinating seedling. The vigour index was calculated by using the formula i.e. Germination percentage X by root length) to know how healthy are the seeds.

It was found that the seed germinated in light were healthier. The seeds of the dicots like moong bean and black gram showed higher vigour index (i.e. in dark-1490 & 1006; in light-1240 & 1316 respectively). as compared to the monocot like wheat (i.e. in dark-630 and in light-1085). On comparing the smaller and the bigger seeds in dicot, the smaller seeds i.e. moong bean and black gram showed higher vigour index (1490 & 1006 respectively) than that of the bigger seeds i.e. rajma and soyabean(10 & 800 respectively) in dark. The dry weight accumulation was always higher in light (i.e. 0.70 gm, 1.66 gm, 1.30gm, 0.56gm, 3.14gm as compared to dark i.e. 0.5gm, 1.45gm, 1.25gm, 0.52gm, 2.84gm) in the seeds of wheat, black-gram, soyabean, green moong and rajma.