Introduction

It is an accepted doctorine that because of Sunlight, there is light on the earth. This broad correlation can be condensed to more precised fact that it is necessary for the perpatuation of autotrophs & their dependence on exact composition of gas & state of water & the temperature. Sunlight is actinic. It will not be an exaggeration that no man-made life source can have an equivalence either in proportion or in composition to that of solar radiation. Alongwith a visible spectral composition of sunlight the invisible such as UV and infra have also known to reach earth travelling thus par the distance.

Sun emits these radiations in sufficient quantity, but the most wonderous part of the nature is the portion of harmful radiations of him is being screened by the atmosphere before it reaches the ground. For, measurement of 'Global UV-B' report shows that in the extra terrestrial radiation, UV-B portion is about 1.3%. After attenuation by the atmosphere the UV-B portion reaching the ground is reduced by less than 0.4%.

Ultraviolet spectrum is broadly classified into four groups -

1) 'Black light' or 'UV-A' with wavelength ranging from 320-400 nm.

2) 'Erythmal region' or'UV-B' with wavelength ranging from 280 - 320 nm.

3) 'Germicidal region' or 'UV-C' with wavelenght ranging from 100 - 280 nm. and

4) 'Schumann region' or 'extreme UV-C' ranging from wavelength of 100 nm. to less than 100 nm.

The solar ultraviolet radiation reaching the earth's surface consists entirely of UV-A and UV-B; with excess of UV-A which is about 90%. It has been considered that UV-A is not that effective in inducing photochemical responses in biological system as much as UV-B. (Caldwell, 1971). Nontheless, UV-B has many more harmful effects on the biological system. Ozone of the atmosphere is the gas which maintains the incidence of UV-B radiation reaching the earth's surface. It is of general concern today that the fast industrialisation and the atmospheric pollution caused, thereby, result into the depletion of atmospheric ozone and thereby allow greater incidence of UV-B on the earth's surface. Many scientific organizations, environmental agencies have expressed their deep concern over this. One of the recently held Workshop meetings in Munich sponsored by the Ministry of Research and technology (BMFT) and environmental agency (EPA), West Germany; 1982, reached a general consensus that statospheric ozone layer that acts as protecting shield from short wavelength solar radiation to man and biosphere is depleting very fast, due to

atmospheric pollutants. This resulted into increased UV-B irradiance on the earth-surface. Therefore, it is necessary to identify the potential effect on biological organism including man and if possible, make assessment of qualitative effect on many biological aspects.

The importance of the study of various biological effects of UV-B radiation is of recent realisation and hence, there are few, if any, reports or researches on this aspect in the literature. In a round table discussion of the International Workshop, Effects of UV radiation on plants, held at New Delhi, in November, 1982, following aspects of UV-B effect on structure and function of plants have been identified.

1) Biosynthesis of various metabolites, protein and enzymes.

2) Effect on morphology of leaf.

3) Methodology of development of DNA and,

4) Functions, such as photosynthesis.

When we talk of its effects on structure and function, it becomes imperative that it has effect on cell division and hence, on activities of DNA. Mutagenic effects of UV radiation is one of the important aspects of mutagenesis study in the literature.

This encompasses different physical agents, both, ionizing radiations and non ionizing radiations as it is being clearly reiterated by Aurebach 1976.

UV in contrast to X-rays and other high ionizing radiations produces only atomic excitations but not ionizations and hence, its effective role in causing chromosomal breakage and rearrangement of DNA is negative. But, he adds that all the same the proportion of rearrangements among UV- induced mutations was generally low and this leads to the second end which was to analyse the nature of gene mutation by means of an agent which is less destructive than X-rays. This clearly reveals that we can not overlook the effect of UV in so far as useful mutations are concerned.

It is of a general realization that the point mutations and chromosomal breakages caused by ionizing radiations are in the magnitudes of greater damaging effects rather than enabling man to screen useful mutation for there are very few examples in agriculture where gamma garden produced mutants are cuvetably cultivated. Auerbach (1976) points out that different biological molecules have different biological spectra for UV holds the hope that comparisons between the mutagenic efficiencies of different wavelength that can show which component of genetic material has to absorb energy in order for a mutation to be produced. Under the light of this, it is more relevant to study the effect of UV-B radiation on primary functional aspect of seed germination and its extension to the structural or functional modifications at nucleic acid level. The objective of the

present investigation therefore, is to examine the responses of the two types of seeds, where one has oil as a store product and in the other, the starch. For the former, Brassica campestris and for the latter Allium cepa seeds were allowed to germinate under UV-B and their mode of responses to UV-B radiation have been analysed in terms of percentage and rate of germination, root and shoot growth, mitotic indices and chromosomal anomalies, total nucleic acid content and cell cycle.