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## SHORT COMMUNICATION

## EFFECTS OF AIR POLLUTION ON AGRICULTURE

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## ABSTRACT

In India, the problem of air pollutions increases due to boosting in size of population, industrialization, and urbanization in the last few decades. Thermal power plants and transport sector is the biggest contributor to air pollution in the country. In 1980, National Crop Loss Assessment Programme (NCLAN) was established for assessing current economic losses in agriculture by air pollution. Air pollutants are present in the forms of gases, particles in suspension, different ionizing radiation in atmosphere and they cause directly or indirectly effects on agriculture crops as well as effects on animals and humans also. Reductions in leaf area, biomass, chlorophyll, ascorbic acid, and N contents have often been observed for the crop species growing in a polluted area. Black carbon directly absorbs sunlight, reduces the amount of light for photosynthesis and caused more damage to the crops and reduce the yields of the crops.

## KEYWORDS

Pollutions, urbanization, economic, agriculture crops, photosynthesis

## 1. INTRODUCTION

Air Pollution is a major problem in South Asia, as compared to Europe and North America. In South Asia domestic coal fires, power plants and heavy industry are major source of air pollution but they are largely disappeared from many parts of Europe to be replaced by the use of cleaner fuels and advanced emission-control technologies (Chung et al.2011). Industrial development and population growth are major problems for impacting air quality and environment in South Asia (Vadrevu et al. 2014). In the last three decades, increasing motor vehicles also led to greater pollutant impacts in more remote rural areas. There are three major ways in which air pollutants may damage agricultural production. These are 1) *Direct visible injury* - usually on leaf tissue, this can affect crop yield. 2) *Direct effects on growth and yield* - pollutants have shown that yields are generally reduced. 3) *Indirect effects* - air pollutants may cause physiological, chemical or anatomical changes. Exposure to sulphur dioxide and nitrogen dioxide leads to increase growth rates of aphid pests (Bell et al., 1993). In 1980, National Crop Loss Assessment Programme (NCLAN) was established for assessing current economic losses in agriculture by air pollution. This programme found that 5% yield reductions should be done by air pollution and estimate reduction in ozone concentrations by 40% (Heck et al., 1985). The air pollutants are present in the forms of gases, particles in suspension, different ionizing radiation and noise. The forms of gases are CO<sub>2</sub>, CO, CH<sub>4</sub>, NO<sub>2</sub>, NO, N<sub>2</sub>O<sub>4</sub>, NH<sub>3</sub>, SO<sub>4</sub>, O<sub>3</sub>, Hg etc.

## 2. EFFECTS ON AGRICULTURE

Injury to foliage that show necrotic lesions (dead tissue), or develops as yellowing or chlorosis of the leaf and reduction in the growth are caused by air pollution. Reductions in leaf area, bio mass, chlorophyll, ascorbic acid, and N contents have often been observed for the crop species growing in a polluted area. Sulfur dioxide enters in leaves through the stomata (microscopic opening) and resultant injury as either acute or

chronic. In air polluted area many small particles of soil and sand are found in air, when they come into contact with leaf, fruits of the plants. They get attached with them and reduce yield and also reduce the quality of the fruits. Black carbon directly absorbs sunlight, reduces the amount of light for photosynthesis and caused more damage to the crops. Covering of the leaf blade, reducing in light penetration and blocks the opening of stomata due to atmospheric pollutants. An economic evaluation of crop loss due to air pollution is an important need of the future to secure food for growing population of the country.

Air pollution may be reduction in growth of various parts of the agriculture crops and they may be killed also. Sulfur dioxide gases are generally formed from coal-burning factory and enter in leaves of the plant through stomata and result injury as acute and chronic. The production of bricks, tile and glass produce fluoride gas which are very harmful for the agriculture crops. Particulate matter such as cement dusts, magnesium-lime dusts are increases pH levels in soil and also cause chlorosis and death of leaf.

## REFERENCES

- Bell, J.N.B., McNeill, S., Houlden, G., Brown, V.C. and Mansfield, P.J., 1993. Atmospheric change: effect on plant pests and diseases. *Parasitology*, 106, Pp. S11-S24.
- Chung, K., Zhang, J., Zhong, N., 2011. Outdoor air pollution and respiratory health in Asia. *Respirology*, 16 (7), Pp. 1023-1026.
- Heck, W.H., Taylor, O.C., 1985. *Assessment of Crop Loss from Air Pollutants*, Elsevier, London.
- Vadrevu, K., Ohara, T., Justice, C., 2014. Air pollution in Asia. *Environmental Pollution*, 195, Pp. 233-235.