International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 02 | Feb 2020 www.irjet.net p-ISSN: 2395-0072

AN OVERVIEW OF AGRICULTURAL POLLUTION: AN EMERGING ISSUE

M. Ranjitham[1], N.V. Manjunath[2], G. Bharath[3], R.U. Deepak[4], R. Desika[5]

[1,2]*Assistant Professor, Department of Civil Engineering, Bannari Amman institute of technology, Erode, Tamil Nadu, India*
[3,4,5]*Student, Department of Civil Engineering, Bannari Amman institute of technology, Erode, Tamil Nadu, India*

ABSTRACT:- *Agriculture may be a supply of economic development and livelihood on one hand, but pollution caused it will result in variety of environmental and health hazards. The nature of pollutants and the way they behave in the respective surroundings are of greater importance. Agricultural pollution is defined as the phenomena of damage, contamination and degradation of surroundings and scheme, and health due to the by products of those farming practices. Many kinds of staple crops, grains, and fruits are being produced from this sector, which are making major share in the export industry. But with the passage of time, this sector is becoming troublesome for the surrounding environment. Agricultural pollution not only affects air, water, and soil, but problems related to health and biodiversity have also been observed through the use of fertilizer, pesticides, organic matter, and greenhouse gas emissions. There will be an alarming situation when agricultural pollution will minimize the agricultural yield itself.*

KEYWORDS: fertilizer, pollutants, pesticides, green house gas emission

1. INTRODUCTION

Agriculture plays a major role in the Economy of the Indian.18 percent of the India's Gross Domestic Product (GDP) is contributed from the India's Agriculture and it provides 50% employment for the workforce. India is the largest producers of rice, pulses, wheat, spices and its products. The Department of Economics and Statics (DES) states the food grain production for the year of (2013-2014) is increased from the previous year (2012-2013).In the year of 2013-2014, the production is 264 million tons whereas in the year of 2012-2013 is 257 million tons.

Recently, Agriculture is facing an crisis which became an emerging issue. Agriculture pollution is mainly emerged due to the farming practices. Agriculture pollution can be majorly divided into abiotic and biotic by products of farming. This pollution results in the contamination or degradation of the environment and surrounding ecosystems. Agriculture pollution has a major issue which affects the livelihood of the humans and their economy. The pollution may come from the different sources like point source pollution and non-point source pollution. Agricultural pollution is mainly arised due to pesticides, fertilizers, animal manure which is more rich in chemical nutrients and toxic substances. The excessive and the aggressive use of these products affects the water quality when it rains and the contaminated soils and water is washed into the adjacent waters or seep into be absorbed by the plants, which are then consumed by the animals and humans. It will terribly affect the animals and human health. To avoid these circumstances and to overcome these crisis, Management technique plays a crucial role. Therefore, how to reduce and prevent the pollution, also how to develop and improve the production of the crops without damaging the Agriculture field is further seen in the following paper.

2. SOURCES OF AGRICULTURAL POLLUTION

2.1 FERTILIZERS AND PESTICIDES

To begin with the earliest supply of pollutants has been insecticides and fertilizers. Modern-day insecticides and fertilizers need to deal with the nearby pests which have existed for masses of years along the new invasive species. And so, they're weighted down with chemical substances that are not absorbed in nature. Once they have been sprayed, it does now not disappear completely. Some of it mixes with the water and seeps into the floor. As an end result, the local streams which are provided water from the floor turn out to be infected, as do the animals that eat these vegetables and plants.[1]

3. CONTAMINATED WATER

Contaminated water used for irrigation is one in addition supply of pollution. Much of the water used comes from the water reservoirs, canals and through the rains. While plenty of its miles easy and pure water, different resources are polluted with natural components and heavy metals. This occurs because of the disposal of business and agricultural waste in local bodies of water. As a result, the crops are uncovered to water which has small quantities of mercury, arsenic, lead and cadmium dissolved in it. The manner of agricultural pollutants becomes harder to combat whilst such water poisons livestock and causes crop failure.

4. SOIL EROSION AND SEDIMENTATION

The troubles are caused by soil erosion and sedimentation. The soil is made from many layers and it is handiest the topmost layer which could help farming

or grazing. Due to inefficient farming practices, this soil is left open for erosion and ends in declining fertility each 12 months. Whether eroded through water or wind, all this soil has to be deposited someplace or the opposite. The ensuing sedimentation causes the soil to accumulate in areas along with rivers, streams, ditches and surrounding fields. And so, the system of agricultural pollution prevents the herbal movement of water, aquatic animals and vitamins to other fertile regions.

5. LIVESTOCK

In the olden days, farmers would preserve as plenty cattle as their land should aid. The farm animals, sheep, pigs, chickens and different animals had been fed herbal diets, which become supplemented through the waste left over from the plants. As an end result, the animals contributed to preserving the farm wholesome as nicely. As of now, cattle is grown in cramped conditions in which its far fed unnatural diets and sent to slaughterhouses on a everyday basis. As a result, they upload to the technique of agricultural pollutants by way of emissions.[2]

6. WEEDS AND PESTS

Growing exceptional plants and reducing the natural species in a positive area has end up the norm for agriculture. However, its miles clearly including to the method of agriculture pollutants. With the arrival of new plants, native population has to deal with new sickness, pests, and weeds that it is capable of fighting. As a end result, the invasive species wreck the neighbourhood and flora and fauna, altering the ecosystem permanently. This is particularly the case with Genetically Modified meals, which create plant and animal species that could wipe out the prevailing species in a matter of years. [3]

7. AFTERMATH OF THE AGRICULTURAL POLLUTION

8. HEALTH RELATED ISSUE

Agricultural pollution is primary supply of pollution in water and lakes. Chemical from fertilizers and pesticides makes their way into the groundwater that ends up in drinking water. Health-associated problems may also arise because it contributes to blue infant syndrome which causes dying in babies. Oil, degreasing retailers, metals and pollutant from farm system motive fitness troubles when they get into consuming water.

9. EFFECTS ON AQUATIC ANIMALS

Fertilizers, manure, waste and ammonia becomes nitrate that reduces the amount of oxygen found in water which end in death of many aquatic animals. Again, bacteria and parasites from animal waste can get into drinking water that could pose critical fitness hazards for diverse aquatic lifestyle and animals. Keeping agricultural pollution in check is lots more difficult than it appears. For the farms to emerge as easy another time, ranges of water, soil, business pollution ought to be kept in test. Over the remaining decade or so, governments have turn out to be stricter about imposing policies. Farmers also are becoming greater aware of the damage and are looking for answers.

10. EUTROPHICATION

Increased ranges of chemicals nutrients in aquatic structures, nitrogen and phosphorus, from manure and fertilizers provide upward thrust to Eutrophication when washed into close by surface waters by using rain or irrigation. Eutrophication is the dense boom of vegetation and algae on the water surface and in particular results in high incidences of algal blooms.

Eutrophication drastically depletes dissolved oxygen that may kill fish and other aquatic biota. It is also related to multiplied occurrence of paralytic shellfish poisoning in humans, main to death.

11. SOIL POLLUTION AND DEPLETION OF SOIL FERTILITY

Chemical insecticides, herbicides and agrochemicals used to manipulate pests, illnesses and weeds typically contaminate the soil and can persist for years. As a result, it regularly alters the soil microbial activities and soil chemistry, depleting soil fertility by killing soil microorganisms. Reports decide that thousands and thousands of fertile soils are misplaced yearly because of the usage of synthetic fertilizers, insecticides, and herbicides combined with different farm practices.[4]

12. WATER POLLUTION

Agicultural operations and practices including beside the point water management and irrigation specially result in water pollutants from surface run-off, both to surface and ground water. The use of fertilizers, pesticides, manure, herbicides and other agrochemicals result in widespread contamination of waterways and floor waters and depreciate water best. Soil erosion and sedimentation equally contaminates the water, makes it dirty, and increases its turbidity. In turn, plants, flora and fauna, human beings, animals and aquatic life are negatively affected.

13. PRECAUTION AND PREVENTION

The precedence is to preserve the nitrogen and phosphorus rich vitamins from walking off into the water sources near fields and animal farms.

Prevention can by no means be a solo effort. The state governments, farmers' corporations, collectives and cooperatives, academic establishments and conservation

organizations want to paintings collectively for regulating and reducing farming related water pollution.

Planning the application of fertilizer at the proper time, inside the right amount with the best strategies can reduce the run off

Planting certain grasses and clovers that may take in and recycle the additional nutrients and save you soil erosion. Planting rows of timber and shrubs round fields and alongside the borders of the circulate or lake also assist in the equal manner.

Over tilling of the soil should be prevented to prevent soil erosion and soil compaction.

Managing the appropriate disposal of animal wastes and keeping farm animals away from water will reduce the nitrogen pollution of the water.

Composting, solid liquid separation, anaerobic digestion and lagoons are distinctive ways of handling animal manure. Of these anaerobic digestion is the simplest. It entails the use of anaerobic bacteria and warmth. The merchandise of this procedure are nutrient rich liquid used as fertiliser and methane gasoline that can be burned to produce energy and heat. Anaerobic digestion is a quality method for controlling odour related to manure management.

14. ORGANIC FARMING

In organic farming, meals is grown and processed, the usage of no artificial fertilizers, however insecticides derived from herbal assets may be utilized in generating organically grown food (NOSB 1995).Organic farms lessen a number of the bad affects of traditional farming together with soil erosion and leaching of carbon and nitrogen. Organic production has been practiced in the USA for the reason that late 1940s. From that point, the enterprise has grown from experimental garden plots to huge farms wherein merchandise are fashioned and bought with unique natural labels. More than forty distinct kingdom businesses currently certify organic food however their standards are unique. According to the organic food manufacturing act of 1990, there would be a country wide list in which the artificial and non-synthetic materials noted cannot be used inorganic farming. Organic farming can contribute to protect the environment and nature conservation.[4]

15. MANURE MANAGEMENT

One of the principle individuals to air, soil and water pollutants is animal waste. According to a 2005 report by the USDA, more than 335 million tons of "dry be counted" waste (the waste after water is removed) is produced annually on farms in the United States [5]. Animal feeding operations produce approximately 100 times more manure than the quantity of human sewage sludge processed in US municipal waste water flowers each year. The benefits of manure treatment are a discount in the amount of manure that needs to be transported and implemented to crops, as well as reduced soil compaction. Nutrients are reduced as nicely, which means that much less cropland is wanted for manure to be spread upon. Manure treatment also can reduce the hazard of human fitness and bio security risks with the aid of decreasing the quantity of pathogens found in manure. Undiluted animal manure or slurry is one hundred times more concentrated than domestic sewage, and may deliver an intestinal parasite, Cryptosporidium, that is hard to locate however may be handed to people. Silage liquor (from fermented wet grass) is even more potent than slurry, with a low pH and very high organic oxygen demand. With a low pH, silage liquor can be enormously corrosive; it can attack synthetic materials, inflicting damage to garage equipment, and leading to unintentional spillage.[6] All of these benefits may be optimized by the use of the proper manure management device on the right farm based on the assets which are available.

17. REFERENCES

JOURNAL ARTICLE

[1] Chemical speciation and potential mobility of heavy metals in soil of former tin mining catchment Ashraf, M. A., Maah, M. J. & Yusoff, 2012.,Pg-[1-11]

[2] Chemical speciation of heavy metals in surface waters of former tin mining catchment, Chemical Speciation and Bioavailability Ashraf, M. A., Maah, M. J. & Yusoff, , 2012. Pg-[1-12]

[3] Bioaccumulation of heavy metals in fish species collected from former tin mining catchment. Ashraf, M. A., Maah, M. J. & Yusoff., 2012. Pg-[209-218]

[4] A review of soil heavy metal pollution from industrial and agricultural regions in China: Pollution and risk assessment QianqiYang, ZhiyuanLi, XiaoningLu, QiannanDuan, LeiHuang, JunBi, 2018

[5] Pollution Prevention, Best Management Practices, and Conservation Maliha Sarfraz, Mushtaq Ahmad, Wan Syaidatul