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Abstract

Deforestation and environmental degradation activities have negatively influenced the agriculture sector in many ways. To a great extent, deforestation is high accelerated by human activities and it has affected the natural ecosystems, biodiversity and the climate. Thus, the study sought to examine the influence of deforestation and environmental degradation on agriculture in Mexico. The research was a literature-based evaluation. The results of the study indicated that that deforestation has affected agriculture negatively. The loss of trees and other vegetation causes climate change, desertification, soil erosion, fewer crops, flooding, increased greenhouse gases in the atmosphere and a host of problems for indigenous people. The study noted that deforestation causes an increase in temperatures and changes in the amount and distribution of rainfall, generally creating a drier climate. These impacts affect soil moisture, reducing yields in some areas and increasing flooding in others. The study concluded that because deforestation and ecological degradation influenced the agriculture sector, and also immediate measures need to be implemented to suppress these activities which are affecting agriculture. The study noted that trees are being cut without any government regulation in Mexico, which consequently is creating huge hectares of land to be cleared leaving open land which cannot attract the rains like the trees. This clearing up of trees by loggers is bringing about loss of biodiversity, aridity and also loss of environment for the wild animals. Additionally, the research study concluded that the building and construction of infrastructure such as roads or dams, mining activities as well as urbanization are likewise contributing to deforestation and also ecological destruction because forests are being cleared to pave means for these projects to take place. Deforestation is contributing to the loss of the amount of water in the soil and also groundwater in addition to atmospheric moisture as well as global warming which is the major root cause of the pollution which consequently creates future impediments in the agricultural sector. The study recommended that the government ought to regulate the cutting of trees and also issue permits to loggers to make sure that forests are not damaged thus putting at risk the lives of several whom dependent on forests for many things which include rains and also residences to the wild animals. The forests in the water catchment areas should be shielded and also ensure trees are not cleared given that in those forests is where the majority of the rivers come from and also the water which moves down the stream is advantageous in doing agriculture through irrigation. The industries which are releasing toxic chemicals to the water resource ought to be closed or they treat the chemicals to become atmosphere friendly before allowing those chemicals to the environment. The study further recommended that urbanization ought to be controlled as quickly as possible because overcrowding in the cities is progressively

creating pollution of the environment and also unhygienic living problems. Additionally, the study recommended that there is a need to embrace reforestation in the places which have been destroyed by the loggers as well as protect those recently grown trees. Individuals in Mexico ought to be sensitized concerning the importance of conserving as well as promoting environmental activities which are of value to present and also future generations.

Keywords: *Deforestation, Environmental, Agriculture, Mexico*

1.0 BACKGROUND OF THE STUDY

Deforestation is the reduction in forests areas across the world that is lost for other usages (Koyuncu & Yilmaz, 2019). Environmental destruction is the damage of ecosystems, the extinction of wild animals and contamination of the environment. Deforestation has been issued of a combination of aspects consisting of agricultural expansion, commercial harvesting, increased firewood collection, inappropriate land and also tree tenure regimes and also industrialization, drought, civil wars as well as bush fires contribute substantially to deforestation. Greatly accelerated by human activities considering that 1960, deforestation has been adversely impacting all-natural ecological communities, biodiversity, agriculture and also the climate. The UN's Food and Agriculture Organization estimates the yearly price of deforestation to be around 1.3 million kilometers settled per decade. Natural factors include natural forest fires or parasite-caused diseases which can result to deforestation (Velasquez-Manoff, M2018). The expansion of agriculture caused virtually 80% of global deforestation, with the building and construction of infrastructures such as roadways or dams, together with mining activities as well as urbanization, making up the remaining causes of deforestation.

Agriculture deals with new challenges such as feeding the world, satisfying the demand for safe and also healthy food following rising world populations, boosting urbanization as well as expanding incomes. Farming additionally produces employment opportunities, as well as sustains the livelihoods of billions of rural individuals across the Planet, specifically in developing countries. In addition, agriculture plays a role in ensuring the sustainability of natural resources as well as biodiversity, particularly taking into account a transforming climate. (Aksoy & Beghin, 2020) Agricultural manufacturing and also trade also required to catch up with the rising demand for food in established and also developing nations. The clearing up of vegetation for the development of farming and also grazing techniques can have adverse effects on the very sources that are needed to sustain these methods. Tropical deforestation has been linked to large-scale soil destruction in Asia, Africa as well as Latin America, thus causing farmers to further expand into forest frontiers to optimize crop production.

Deforestation adds to global warming, which in turn develops future challenges for farming (Gervet, 2017). Deforestation caused weather modifications to interact with global warming brought about by greenhouse gas exhausts, each potentially having a worsening result on the other. Models recommend tipping points exist after which impacts will speed up and forest loss, and also consequently threats to agriculture, can end up being permanent. Deforestation causes an increase in temperature levels as well as modifications in the amount and circulation of rains usually producing a drier climate. These effects can influence soil moisture, decreasing yields in some locations and increasing flooding in others. International agricultural trade has expanded dramatically during recent years and also experienced a yearly growth of 6% from 2000 to 2016. Agricultural products show one of the most significant increases, expanding by 3.1% each year and also climbing by 36% from 2008 to 2018. Agricultural products additionally have indirect

environmental results as it displaces farmers onto low lands leading to deforestation and also soil erosion.

Agriculture in Mexico has been a crucial field of the country's economic situation traditionally and politically although it now accounts for a very small percentage of Mexico's GDP. Farming from the colonial period till the Mexican Revolution was concentrated on large private properties (Hart, 2019). After the Revolution, these were separated and also the land rearranged. Mexico's main crops consist of grains such as corn as well as wheat, exotic fruits and also various vegetables. Agricultural exports are essential, especially coffee, exotic fruits as well as winter season vegetables and fruits. Sixty percent of Mexico's farming exports most likely to the USA. Commercial agricultural products primarily come from three locations of the country, the tropic of the Gulf of Mexico as well as Chiapas Highlands, the irrigated lands of the north and also northwest and also the Bajio region in central Mexico. Traditional farming methods with small plots functioned by households and small areas still control in numerous regions specifically those with huge native populations. (Jerneck and Olsson, 2018) say that lots of peasants still make it through on subsistence agriculture earning money by marketing excess crops in local markets.

Much of the Mexican land is too dry and too mountainous for crops or grazing, woodlands cover 67 million hectares or 34% of the country. The terrain of Mexico includes two huge plateaus. Animals make up 30% of Mexico's farming output, creating milk, chicken, eggs as well as beef. As the all-natural field is insufficient to support modern-day industrial livestock manufacturing, pet feed is created as a crop or as a measure to improve natural pastures. In lots of locations, land made use of for the manufacturing of animal straw, such as sorghum, is replacing that used for the expanding of corn for human consumption. (McMichael, 2020) stated that Mexico encounters severe environmental degradation due to years of rapid population growth as well as industrialization, without appropriate ecological investment and enforcement has left a legacy of polluted waters as well as huge amounts of improperly stored waste. Mexico has serious water air pollution troubles; just 10% of the country's metropolitan wastewater is treated. The study sought to determine effects of deforestation and environmental degradation on agriculture in Mexico

2.0 LITERATURE REVIEW

Ancient forests in the heart of Mexico are being lost to prohibited logging and also manmade fires, damaging trees that are centuries old and a rich habitat home to Mexican wildlife (Hecht & Cockburn, 2019). Like the Sierra Gorda range of mountains contains various habitats, consisting of pine-oak woodland, tropical evergreen forests and also cloud woodland. This forest includes several tree species that are identified as globally endangered including the Mexican Royal Oak, Gregg's yeam as well as the Magnolia. The forests are also home to a rich variety of Central American wild animals, from among the world's smallest birds. Sadly, human activity has had a severe impact on ecosystems, and habitats are being lost to deforestation for farming, ranch and also manmade fires. The forests land in Mexico is divided right into small portions and so is not matched to a lot of forestry job because of high wood production costs (Muñoz-Piña, Guevara, Torres & Braña, 2018). Mexico has lost the majority of its all-natural forests, during the last couple of years, the typical variety of hectares deforested got to near one million per year.

The environmental effect of farming varies widely based upon methods used by farmers and by the scale of the technique (Ikerd, 2021). Farming communities that attempt to decrease ecological influences through modifying their techniques will certainly take on sustainable agriculture practices. Practices like pastoralism is ecologically positive, modern-day animal farming practices

often tend to be extra ecologically destructive than agricultural methods concentrated on fruits, vegetables and other biomass. The discharge of ammonia from livestock waste remains to elevate concerns over environmental pollution. The environmental influence of agriculture includes influence on a variety of different factors like soil, water, and air, animal. Farming contributes to a great deal of ecological problems that cause ecological destruction including dead zones, soil degradation, biodiversity loss, climate modification, toxins, waste and deforestation (ERuhl & Salzman, 2021). The nitrogen build-up in water and also on land intimidates biodiversity and the wellness of indigenous plant varieties and also natural habitats. In addition, plant food application in soil causes the development and also release of nitrous oxide, which is one of the most harmful greenhouse gases.

Man-made deserts are growing in Mexico, the commercial timberline is moving up the slopes and also the forests frontiers are being raised up the hills by stress from farmers, cattle raisers, fruit orchards, coffee plantations as well as local landless fieldworkers. Deforestation in Mexico has been cumulative bad luck caused by poverty, misconceived government policies, greed of some loggers, tree poaching as well as inadequate technological guidance. Some forest administration plans are triggering genetic disintegration through dysgenic choice which eventually will degrade the forest performance as well as sustainability over time (Putz, Redford, Robinson, Fimbel & Blate, 2018). The most typical reasons for deforestation and forest deterioration consist of illegal logging for fire wood and charcoal, prohibited logging for commercial wood items, previous land clearing up government programs, lawful and also prohibited land cleaning for farming and also animal grazing, forest fires and also pest attacks, lack of environmental and forest education of the owners, inadequate supervision of the forest monitoring plans, discerning logging i.e. always reducing the best trees, corruption of authorities in the process of wood supply and also absence of guidance by private owners that fear of being abducted.

The degradation of land is just one of the kinds of severe issue endangering sustainability of agriculture (Liu, Zhang, Wang, Sui, Zhang, Herbert & Ding, 2019). Landslide brought on by heavy rains and also flowing water in uneven areas and deforestation, overgrazing as well as defective cultural methods in the forest and other plain locations subject the soil to water and also wind erosions. The waterlogging because of rising aquifer, specifically along rivers, providing soil unsuited for farming. Increased dependency on extensive farming and also irrigation likewise results in salination, alkalination and also waterlogging in some irrigated locations in Mexico. When burning biomass it produces soot, dust and also traces gases which are released, burning is traditionally practiced in slash and also melt exotic farming, in firing of savannah areas by pastoralists to boost forage growth and also in cleaning of fallow land and also getting rid of plant residues especially rice. This burning results in major global impacts like air pollution in tropical regions away from the resources of fire (Ramanathan & Feng, 2019). Those farming on slopes of sloping areas, when heavy rainfalls falls it causes soil erosion and transferring the silk on the plain areas that makes crops and plants in these areas to dry out for this reason making agriculture difficult in both areas.

Mexico's long background of land-use modification and also land-tenure policies makes this nation a distinct situation in the sensation of deforestation (Durán, Bray, Velázquez, & Larrazábal, 2020). After Spanish colonization, lowland regions were exchanged grazing lands. By the very early 20th century the impact of Mexico's rural population on the nation's forests frontiers was clearly evident. Expanding countries populations have actually been shaping forest ecology to such a level that it is approximated that 60-80 percent of the initial indigenous forests have been diminished or

changed. Mexico has among the highest prices of deforestation when contrasted to other four Latin American nations. Even forests that continue to be undamaged have been impacted by the long history of humanlike activities that have actually changed the ecology and also species variation of the present forests. The savannah forest that exists on the lowland level along the Gulf of Mexico has actually been changed as result of long-term grazing activities. During the duration of post-revolutionary land reform, the forest policies that were applied allowed professionals (logging firms, large-scale livestock ranchers) to have accessibility to forest sources on a for-profit basis (National Study Council, 2021). Forest conservation ended up being even more of a problem as deforestation was identified as being the outcome of issues related to water quality, soil degradation, and agricultural production.

Deforestation can involve conversion of forest land to farms, ranches or urban usage. One of the most concentrated deforestation takes place in exotic rain forests. The elimination of trees without sufficient reforestation has caused habitat damages, biodiversity loss as well as aridity (Oljirra, 2019). Deforestation is a contributor to global warming as well as is frequently mentioned as one of the major root causes of the enhanced pollution. Tropical deforestation is accountable for roughly 20% of globe greenhouse gas discharges. In deforested locations the land heats up faster as well as gets to a greater temperature leading to localized upward activities that improve the formation of clouds and eventually create even more rains. The water cycle is likewise impacted by deforestation; trees essence groundwater through their origins as well as launch it into the environment. When part of a forest is removed the trees no longer transpire this water causing a much drier environment which is unfavorable for agriculture. Deforestation lowers the quantity of water in the soil as well as groundwater along with atmospheric moisture (Peña-Arancibia, Bruijnzeel, Mulligan & Van Dijk, 2019). Deforestation interrupts regular climate patterns developing hotter as well as drier climate thus boosting dry spell, desertification, plant and crop failures, melting of the polar ice caps, seaside flooding and also displacement of significant vegetation regimes.

Global warming together with deforestation is modifying the rainy periods and also the quantity of rainfall all over the country which consequently is causing the agriculture sector to fail terribly. Some temperate species are being influenced by warmer temperatures and less precipitation. The stress of weather change on the forests is extra intense on those varieties with restricted distribution areas. Deforestation is the second crucial source of climate change after the burning of nonrenewable fuel sources as well as represents almost 20% of all greenhouse gas discharges (Tubiello, Salvatore, Rossi, Ferrara, Fitton & Smith, 2021). The loss of trees which retain soil with their roots indicates that after heavy rains water erodes the soil into rivers causing landslides and also flooding. The sediment in rivers is enhanced which drowns fish eggs causing a decline in hatching out prices. When the suspended particles reach the sea they cloud the water affecting reef and costal fishing. Tree felling has a damaging impact on the addiction of carbon dioxide as well. Deforested regions have a tendency to have more soil disintegration and also usually weaken to non-productive land.

Environmental degradation is the deterioration of the setting through depletion of sources which consists of factors like water, soil and also air contamination (Nagdeve, 2019). The United Nations International Strategy for Disaster Reduction defines environmental deterioration as the decrease of the capability of the setting to fulfill social and environmental objectives and needs. Aquifers are key water resources for individuals of Mexico whereby they use the water for agriculture as well as other functions, however, due to mass climate adjustment, droughts, as well as huge

population growth these aquifers, are drying out. By the year 2025, the Bolson Hueco Aquifer is anticipated to be depleted; this aquifer is a main resource of water for El Paso as well as Ciudad Juarez which has forced those counting that aquifer for water to look to Rio Grande. Those residents living in the downriver cities eastern of El Paso have actually been impacted by the brand-new distributions of water. Air pollution in Mexico has actually been created via various outcomes consisting of car discharges and also commercial exhausts.

Scientists assert that human activity has pushed the earth right into a sixth mass termination event, the loss of biodiversity has been associated in particular to human overpopulation, proceeded human population growth as well as overconsumption of natural resources by the world's rich. Considering that the establishment of agriculture over 11,000 years earlier, human has changed roughly 70% of the earth's land surface area, with the global biomass of plants being minimized by half and terrestrial animal neighborhoods are seeing a decrease in biodiversity above 20% usually. A research study conducted 2021, says that simply 3% of the earth terrestrial surface is environmentally and also faunally undamaged definition locations with healthy and balanced populations of indigenous animal types as well as little to no human impact. A number of these undamaged communities remained in areas populated by indigenous individuals. The implications of these losses for human source of incomes and wellbeing have elevated significant problems (Corvalan, Hales, McMichael, Butler & McMichael, 2018). With the respect to the agricultural sector, lots of countries report that many varieties that contribute to important community solutions including pollinators, the natural enemies of pests, soil organisms as well as wild food species are in decline therefore of the devastation as well as destruction of environments, overexploitation, air pollution and various other risks. The crucial environments that provide many services essential to food as well as agriculture consisting of supply of freshwater, security versus threats as well as stipulation of environment for species such as fish and pollinators are decreasing.

Another major element of environmental degradation is the depletion of the resource of fresh water in the world. Approximately just 2.5% of every one of the water on Earth is fresh water, with the remainder being seawater. 69% of fresh water is frozen in ice caps situated on Antarctica and Greenland so just 30% of the 2.5% of fresh water is readily available for usage. Fresh water is an extremely important resource given that life in the world is eventually based on it (Woodworker, Stanle & Vander Zanden, 2021). It is approximated that one in three individuals over the whole world are currently encountering water scarcities almost one-fifth of the globe population reside in areas of physical water shortage and also virtually one quarter of the globe's population reside in a creating country that lacks the required framework to utilize water from readily available rivers and aquifers. Water shortage is an increasing problem as a result of lots of anticipated issues in the future including population growth, raised urbanization, greater standards of living and also climate change.

Agriculture is dependent on available soil wetness which is straight affected by climate dynamics with precipitation being the input in this system and also different procedures being the outcome such as evapotranspiration, surface area overflow, drainage and percolation into groundwater. Changes in climate especially the adjustments in rainfall as well as evapotranspiration predicted by environment versions, will directly influence soil moisture, surface area overflow as well as groundwater recharge (Kumar, 2021). In areas with decreasing rainfall as anticipated by climate models soil moisture might be substantially reduced for this reason agriculture in many areas requires watering which depletes fresh water supplies both by the physical use the water as well as the deterioration agriculture triggers to the water. Irrigation enhances salt as well as nutrient

content in areas that would not typically be influenced and also problems in streams and rivers from clogging as well as elimination of water. The transfer of water from farming to urban and also suburban use elevates issues about agricultural sustainability, rural socioeconomic decrease, food safety, an enhanced carbon footprint from imported food and also lowered foreign trade balance.

Production industries are venting smoke as well as discharging chemicals that are contaminating water sources. The smoke that is given off into the atmosphere holds damaging gases such as carbon monoxide and also sulphur dioxide (Pierson, Koenig & Bardana Jr, 2019). The high levels of air pollution in the environment form layers that are ultimately absorbed right into the atmosphere. Organic compounds such as chlorofluorocarbons have actually generated an unwanted opening in the ozone layer which releases higher levels of ultraviolet radiation placing the world at a great hazard as well as the food production within the farming because of unpredicted weather conditions. An enhanced population suggests boosted withdrawals from the water system for domestic, farming, and also industrial makes use of the largest of these being agriculture which is believed to be the significant non- climate motorist of environmental modification and water degeneration. The human population in the world is broadening tremendously which goes hand in hand with the destruction of the setting at large measures (Boyce, 2020). The urbanization triggers overcrowding and increasingly unsanitary living conditions and eventually will pollute the environment.

3.0 RESEARCH FINDINGS

The study found that deforestation, as well as ecological degradation, has affected the agricultural sector adversely. The clearing up of forests for farming, urbanization or ranching purposes has severe influences in the long run because these forests are the ones that attract the rainfall. Deforestation has caused interference with the regular climate patterns which the farmers are conversant with them thus developing hotter as well as drier weather conditions, therefore, raising the drought and also famine, desertification and also plant and crop failures. This brings a huge loss to the farmers who had planted before the beginning on the rainfall or gathering lower amounts of return than expected. The cutting of trees has actually triggered water deficiency given that the water catchment areas are subjected to the warm sun making them to dry up therefore there is little clean water for human usage.

The study revealed that the environmental deterioration has affected agriculture majorly in the destruction of the environment, the wildlife as well as contamination. The ecosystem is an important component of agriculture for example, throughout the pollination process where pests like bees are very important in the cross-pollination process. The pollution of water resources is influencing agriculture since this water can cause the grown to dry up and also is danger to marine life. This might lead to losses to the farmers as well as starvation because of loss of food, can create health and wellness results to human as well as animals who consume alcohol the polluted water. In the production industries which produce into the atmosphere gases such as carbon monoxide as well as sulphur dioxide, causing unwanted opening on the ozone layer which discharges greater levels of ultraviolet radiation placing the earth at risk due to high temperatures.

4.0 CONCLUSION

The study concluded that deforestation has affected agriculture negatively. The loss of trees and other vegetation causes climate change, desertification, soil erosion, fewer crops, flooding, increased greenhouse gases in the atmosphere and a host of problems for indigenous people. The study noted that deforestation causes an increase in temperatures and changes in the amount and distribution of rainfall, generally creating a drier climate. These impacts can affect soil moisture, reducing yields in some areas and increasing flooding in others. The study concluded that because deforestation and ecological degradation influenced the agriculture sector, and also immediate measures need to be implemented to suppress these activities which are affecting agriculture. The water catchment areas have currently been subjected to extreme weather conditions of straight sunlight since the trees utilized to protect these locations have been cut, making water to become one of the issues to individuals and also animals who are settled down the stream. According to the study, it is concluded that trees are being cut without any federal government regulation in Mexico, which consequently is creating huge hectares of land to be cleared leaving open land which cannot attract the rains like the trees. This clearing up of trees by loggers is bringing about loss of biodiversity, aridity and also loss of environment for the wild animals. The agriculture sector, in many nations, wrapped up that many types that contribute to vital ecosystem services which include pollinators, the natural enemies of pests, soil organisms as well as wild food varieties are in decline because of the damage as well as degradation of habitats, overexploitation, air pollution and also various other dangers triggered by clearing of forests.

Additionally, the research study concluded that the building and construction of infrastructure such as roads or dams, mining activities as well as urbanization are likewise contributing to deforestation and also ecological destruction because forests are being cleared to pave means for these projects to take place. Deforestation is contributing to the loss of the amount of water in the soil and also groundwater in addition to atmospheric moisture as well as global warming which is the major root cause of the pollution which consequently creates future obstacles in the agricultural sector. It additionally interferes with the normal weather condition patterns creating hotter as well as drier climates thus enhancing drought, desertification, crop failures hence impacting farming and causing famine as well as drought. the research study ended that, loss of trees that preserve soil with their roots suggests that after heavy rains water deteriorates the soil into rivers creating landslides as well as floods, consequently triggering gully erosion and also switching off of the productive topsoil which is best for farming. The production factories are releasing smoke and also discharging chemicals that are contaminating water resources. The smoke that is discharged into the environment holds damaging gases such as carbon monoxide gas as well as sulphur dioxide which results in the devastation of the ozone layer which sends out higher levels of ultraviolet radiation putting the planet at a great threat because these can trigger health effects and reduced agricultural produce because of unpredicted weather conditions.

5.0 RECOMMENDATIONS

The study recommended that the government ought to regulate the cutting of trees and also issue permits to loggers to make sure that forests are not damaged thus putting at risk the lives of several whom dependent on forests for many things which include rains and also residences to the wild animals. The forests in the water catchment areas should be shielded and also ensure trees are not cleared given that in those forests is where the majority of the rivers come from and also the water which moves down the stream is advantageous in doing agriculture through irrigation. The

industries which are releasing toxic chemicals to the water resource ought to be closed or they treat the chemicals initially to become atmosphere friendly before allowing those chemicals to the environment. The study further recommended that urbanization ought to be controlled as quickly as possible because overcrowding in the cities is progressively creating pollution of the environment and also unhygienic living problems

Additionally, the study recommended that there is a need to embrace reforestation in the places which have been destroyed by the loggers as well as protect those recently grown trees. This will certainly try to restore the lost weather problems which are so beneficial to agriculturists to do their farming. It will certainly also promote the lost rich biodiversity as well as retain the species of wild animals which are at threat of being vanished as a result of undesirable weather conditions. Finally, the study recommended that as opposed to clearing forests in the exotic areas for farming, the land which is in the completely dry areas is the one which should be utilized for farming and also use irrigation techniques of farming and also leave the forests which are attracting rainfall and residence to wild animals. Individuals of Mexico ought to be sensitized concerning the importance of conserving as well as promoting environmental activities which are of value to present and also future generations.

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