Examine the effects of the impact of human activity on soil

Health & Medicine

In the context of living in the modern world theenvironmentis very important to study and maintain. Astechnologyadvances the world we live in is changing, but sometimes these changes are disturbing the balance of nature that has been well established for thousands of years. The effect that we are having on soil is often very detrimental; erosion is an ever-present problem all across the globe. I aim to investigate the impact that human activity has had on soil, and evaluate solutions to the problem.

Initially it is important to look at what can be damaged and what the risk is to soils. The main threats include erosion, acidification, pollution, compaction, organic matter loss and salinisation. The increasing amounts of fertilizers and other chemicals applied to soils since World War II, has caused great concern over soil pollution. The application of fertilizers containing the primary nutrients, nitrogen, phosphorus, and potassium, doesn't lead to soil pollution, the application of trace elements does. Sulfur from industrial wastes has polluted soils in the past.

When lead arsenate was used on crops this had deadly effects but this is now outlawed due to these. The application of pesticides also leads to short-term soil pollution. Ploughing was once a major erosion-causing problem. The way it used to be carried out was known as clean cultivation, which left the topsoils exposed to all natural erosive problems. This was done by the use of the moldboard plow by farmers, now replaced by better ploughs, which leave a litter layer on the surface to prevent erosion. Irrigation is the artificial watering of land to sustain plant growth.

This happens across the globe in areas where the water budget is below the required amount. In dry areas, such as the southwestern United States, irrigation must be maintained from the time a crop is planted. In 1800 about 8. 1 million hectares (about 20 million acres) were under irrigation, a figure that has risen to more than 222 million hectares (550 million acres) today. Irrigation, however, can waterlog soil, or increase a soil's salinity to the point where crops are damaged or ruined. The irrigation of arid lands often leads to pollution with salts.

This problem is now jeopardizing about one-third of the world's irrigated land. About a third of all soils in England and Wales have been identified as being at risk from water erosion. Another careless error of human kind is to let overgrazing to occur. Overgrazing, which in time can change grassland to desert, can be seen causing great problems in the USA. The dustbowl effect is evidence of this. It is believed by some historians that soil erosion has been an underlying cause in various population shifts and the fall of certain civilizations.

Ruins of towns and cities have been found in arid regions such as the deserts of Mesopotamia, which shows that agriculture was once widespread in the surrounding territory. To remedy these problems we have to act fast. In protecting soil we have to consider not only the land but also the land use and the pressures on it, and then find the correct balance of how to help both the land and people. Often without themoneycoming in from industry and farmers the land that we need to conserve would have gone to waste anyway and there money is preserving it already.

Farmers have been looking for solutions for centuries, and in the Middle Ages in Britain and to present day crop rotation was a possible solution. This is where through different seasons different crops were used, and sometimes the field was left bare to recuperate. In modern rotation systems soil-building plants are used. These crops hold and protect the plants during growth, and also when mixed in to the ground provide much needed nutrients.

Special methods for erosion control include contour farming, where the farmer follows the contours of sloping lands, and ditches and terraces are constructed to reduce the runoff of water. This is particularly useful in areas with high precipitation. Another soil-conservation method is the use of strip-cropping. This is the use of alternate strips of crop and fallow land. This method is valuable for control of wind erosion on semiarid lands that need to lie crop-free for efficient crop production.

Without human activities, losses of soil through erosion would in most areas probably be balanced by the formation of new soil. On new land a layer of vegetation protects the soil. When new industry is formed in an area the protective canopy of trees that would shield the ground from a lot of rainfall is destroyed which greatly speeds up erosion of certain kinds of soils. Erosion is less severe with crops such as wheat, which cover the ground evenly, than with crops such as corn and tobacco, which grow in rows and have bare spaces.

When ramblers go out in the countryside they cause another problem, trampling. Through repeated trampling the ground gets ruined and so do the plants, until walkers use alternate paths and also eventually ruin those as

well. These methods are all very effective in combating erosion. They are split into five categories, revegetation, erosion control, crop management, run-off control and soil reclamation. The latter is done through drainage. I believethe easiest of these to use is good crop management. This would mean a well-stratified plan to the use of the land b the farmer.

It is the cheapest to do, as no alterations to the land are required. It can be done globally but in poorer areas there may be too much pressure to maintain this. At Kinder Scout in England revegetation has been a successful move, replacing plants where walkers had trampled them. The conclusion I am making is that for every soil where human problems have had a diverse effect, it will be a different solution required. There is no standard answer, and farmers, walkers and industrialists need to come up with their own.