

EFFECTS OF THE INTENSIVE AGRICULTURE ON THE ENVIRONMENT

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Abstract:

Agriculture is the backbone of the Indian economy from ancient period to modern days. Productivity of Indian agriculture has fourfold since then and today only 25 percent of our labor force produces enough food and fiber to meet domestic needs. Increase in productivity is due to the many factors such as use of fertilizer, pesticides, introduction of farm machinery, development of hybrid strains and increased knowledge about farm management practices. As agriculture has become more intensive due to that farmers are capable of producing higher yields using less labor and land. Along with that it also creates environmental impact, including potential degradation of the soil and water resources vital to both farm productivity and human health. Such environmental problems can best be understood by tracing their evolution through the history of farming in this country. The research article highlights the adverse effect intensive agriculture on water, soil and overall ecosystem.

Key words: Intensive agriculture, Farm management.

History of Indian Agriculture

Agriculture in the Indian dates back to the food-raising activities of Indians and over more than half of the value of our present crops comes from plants like wheat, barley, bajara, cereals, corn, cotton, potatoes, etc. During the initial period of early 19th century agricultural methods were primitive. The fertility of Gangatic plain is more so the intensive agriculture took place in that region. The fertility has increase from the mountain ranges of the valley towards the Arabian sea. The people started shifting in that region.

Agricultural Revolution. Took in mid-1960 leading to to great change in Indian agriculture, influenced by the British agricultural revolution, which brought advances in cultivation methods like breeding of improved crop varieties, use of chemical fertilizers and crop rotations to maintain soil productivity.

The use of pesticides also began in the mid 1950s, when it was discovered that dusting of grape plants with sulfur provided a cure for powdery mildew. Chemical control of agricultural pests expanded rapidly after these initial discoveries and by 1980 there were many patented insecticides offered by several manufacturers.

The benefits of irrigation were improved during the government of prime minister Lal Bahadur Shastri. The new techniques in tilling, planting, threshing, storage increased the efficiency in Indian agriculture. The use of machine has increased the efficiency of farming many times within very small interval and with cheaper rate. This created more interest in farmers and gradually the machine become the powerful tool towards the farming . The reform in the farm such as rotation of the crop which could increase the productivity of food grains twice as that of previous. During the year 1965 the government responded to this need by providing funds for state agricultural extension programs assist farmers in adopting improved farming methods.



To get the better response the argent need for soil and water conservation programs must be highlighted. The soil erosion is the major concern in the sloppy farms. To improve the different methods such as contour plowing, terracing and strip-cropping to retain water on the fields and reduce runoff and erosion is carefully done. In the uncultivated areas the trees and some useful grass or weeds must be planted. The growing grass provides the protection to the soil erosion.

Growth towards Intensification of Agriculture.

The growing demand of food during last 25 years have witnessed the doubling the population and requirement of food. In order to meet the required demand there is need for modernization in the agriculture sector. The increased use in the fertilizers and pesticides with modern use of techniques required production of food is meet. The continuous cropping in a large areas with single cropping however increased the efficiency of the yield of the farm to large extent. In the last 20 years productivity of agriculture has rapidly increased even the land acreage is decreased by marginally decreasing the labour hours. These dramatic changes were occurred with the help of technological innovations, development of hybrid varieties and genetic improvements. As a result of these, changes has been taken place in agriculture to become more intensive, producing higher yields per acre by relying on greater chemicals use and technological inputs. The concept of single extensive farming could be the effective instead of small farms growing large varieties of crops. The extensive single cropping pattern reduced the total number of farmers.

Impacts of Intensive Farming on Soil and Water Resources

1. Soil damage: due to the various of soil erosion agent the top layer of the surface vanished and to form the eroded soil it takes about 300 years. The soil damage hampers the production of the crop. The large cropping and amount of erosion varies considerably from one field to another, depending on soil type, slope of the field, drainage patterns and crop management practices Damage to Soil.
2. To increase the productivity affected due to the soil erosion the other way is to use fertilizers and pesticides for more production.
3. The eroded soil and its chemical content many harm the fish and species of aquatic life.
4. Increase in agriculture contaminates the water and due to the runoff of water it reduces the fertility of the soil by reducing the manure content. Due to the use of fertilizers, chemicals, pesticides the streams and lakes water causes increase in level of bacteria and nutrients further contaminates the ground water. So there is adverse effect on the flora and fauna.
5. The three major nutrients in fertilizers are nitrogen, phosphorus, and potassium. Of these, nitrogen is the most readily lost because of its high solubility in the nitrate form.
6. The extensive single cropping pattern reduced the total number of farmers.
7. Increasing pesticide use develops resistance in pest.
8. Soil and water pollution due to the chemical and fertilizers. Pesticides also pollute the environment.
9. Reduces the fertility of the soil.

10. Excessive farming, ploughing and grazing leads to the soil erosion.
11. Water is not drinkable.
12. Polluted water and soil reduces the food production.
13. The work hours increases to improve the efficiency of production.

Comparative study

The Table 1 shows the comparative data of land availability in year 2000 and 2010 with average production in India.

Land Availability in million hectares in year 2000 (million hectares)	Average Production in 2000 (Million tones)	Land Availability in year 2010 (million hectares)	Average Production in 2010 (Million tones)
157.5	252	162	635.6

Table 1. Comparison of Availability of land and its production in 2000 and in 2010

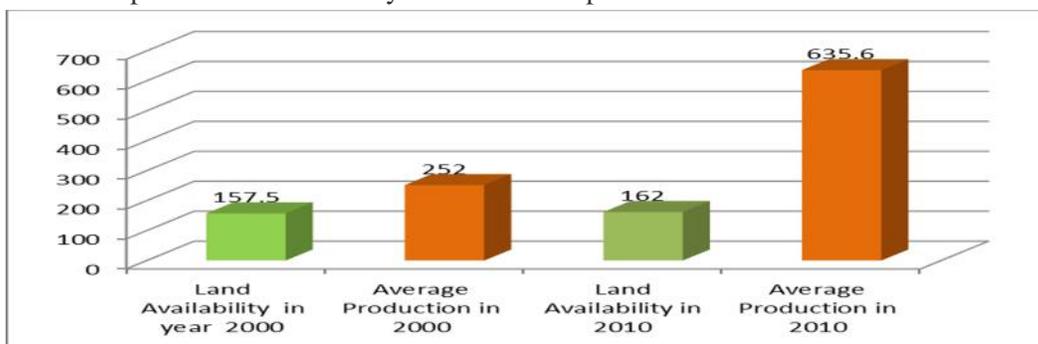


Fig. 1 Comparative plot of Availability of land and its production in 2000 and in 2010

Form the graphical representation it is observed that average available land in million hectares not increased much but the production during the 2010 has increased 3 times to that of 2000.

Year 2000				Year 2010			
Soil pollution	Water pollution	Air	Intense use of agriculture	Soil pollution	Water pollution	Air	Intense use of agriculture
24.1	50.5	23	4	40.6	73	20	

Table 2. Comparative Percentage of pollution of different purposes

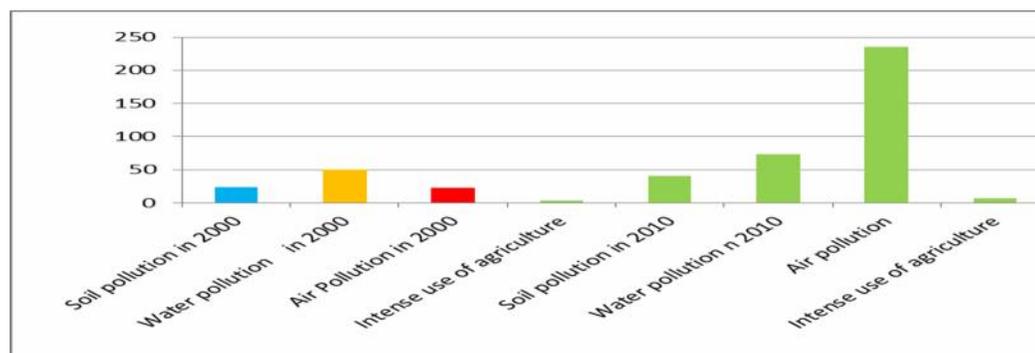


Fig 2. Comparative percentage of pollution of different events in 2000 and in 2010



From the Fig. 2 it is seen that water pollution is very high in 2000 while the air pollution is more in 2010. Graph also indicates that the pollution percentage s increased in 2010. The increase in pollution as compare to 2000 results due to the increase in factories, intensive agriculture, use of chemicals, erosion, vehicles and natural factors.

Conclusions:

The Agriculture in Indian has changed during the last 5 decades. During this period the farmers used cheap energy source and water. The extensive farming. Use of fertilizers and pesticides has great negative impact on the environment. The rise is pollution s major concern in the environment. It is increasing day by day. The excessive use of chemicals and pesticides developed resistive power among them. The prices of chemicals has rose rapidly. The soil and water resources and contaminated. As result of all this the intensive farming is done in Gangatic plain rather than mountain ranges and table land. The ground water is of no more directly used for the drinking purpose. It has adverse effect on the flora and fauna in the country.

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