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NEGATIVE IMPACT OF INTENSIVE FARMING ON GROUNDWATER SOIL AND LAND IN KURUSHETRA DIDTRICT

Haryana State, India



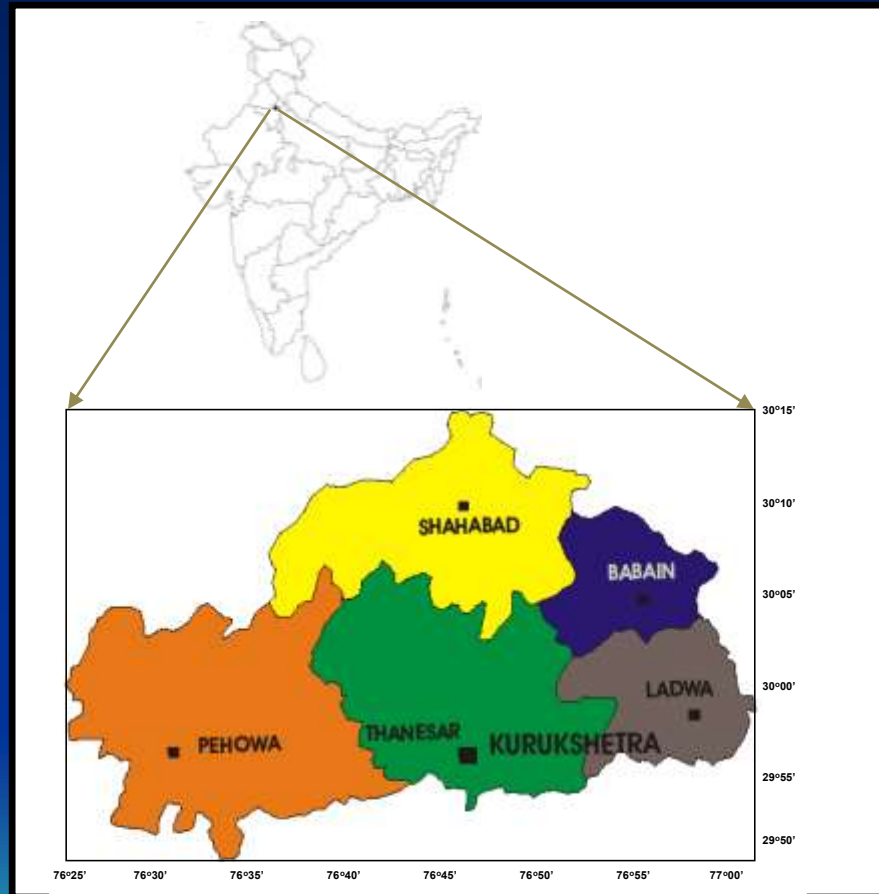
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Haryana, India

Location of Haryana State , Kurukshetra District and its Five Blocks In India

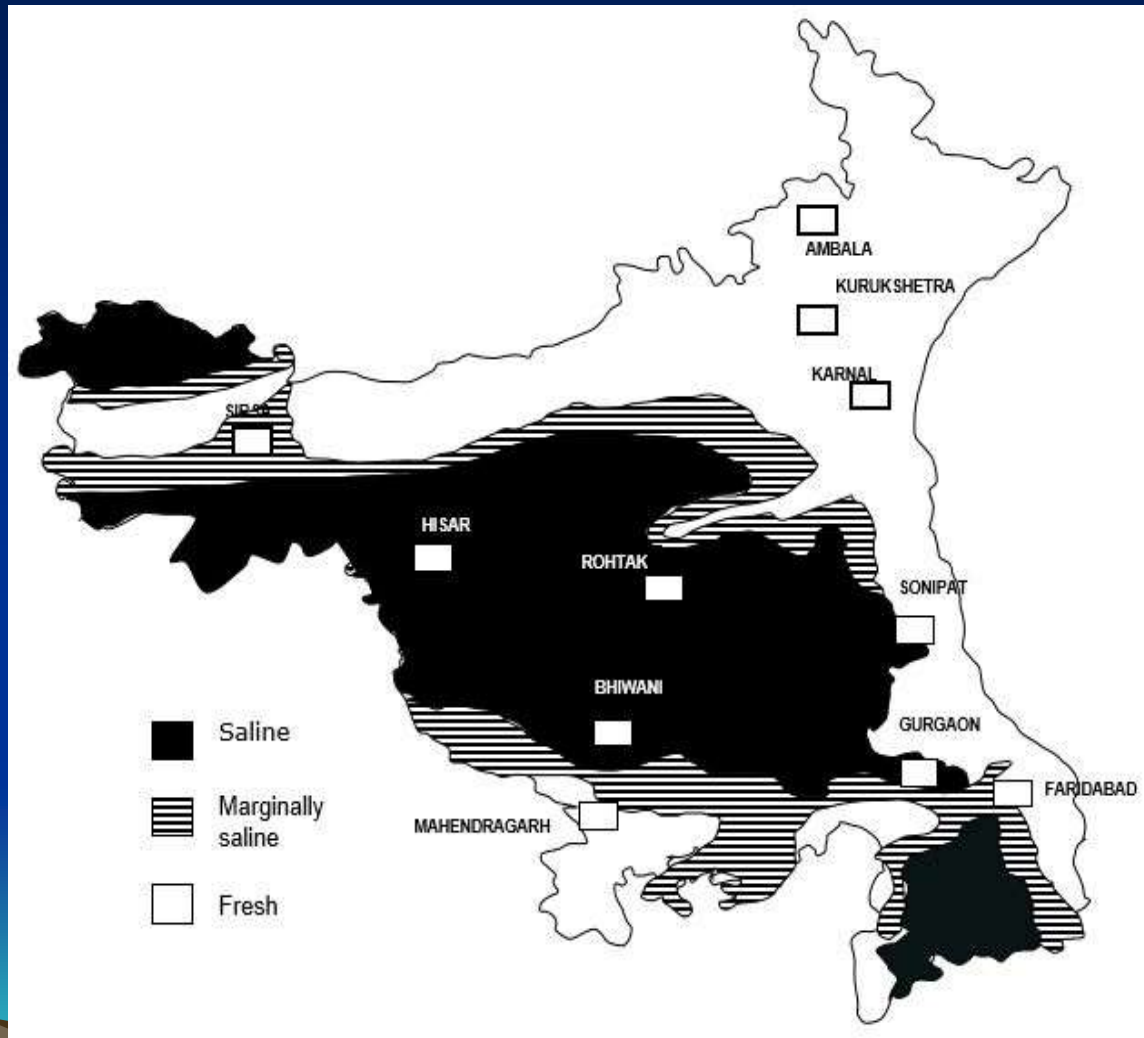


Kurukshetra District :Salient Features

- ❖ **This north Indian district is the part of Haryana states eastern agro-climatic zone.**
- ❖ **Geologically it is the part of Indo-Gangetic alluvial plains of Late Quaternary-Holocene age.**
- ❖ **These fertile plains are a unique feature in the geology of India separating northern Himalayan region from the southern peninsular massif**
- ❖ **Principle crops: Wheat, rice and sugar-cane.**
- ❖ **Geographical area : 1530 Km²**
- ❖ **Cultivated Land : 1444 Km² (94.4%)**
- ❖ **Groundwater Irrigation : 82%**
- ❖ **Surface water Irrigation : 18%**
- ❖ **Number of tube wells (1973): 35,725**
- ❖ **Number of tube wells (2010): 71,910**
- ❖ **Density of tube wells (1973): 10/km²**
- ❖ **Density of tube wells (2010): 40/km²**
- ❖ **Groundwater Extraction : 166% of potential rainfall recharge**
- ❖ **Average rate of groundwater level decline (part 30-35 Years) :0.3m – 0.5m / year affecting farmers' bill (electricity/ diesel for pumpsets)**



Groundwater Quality Map of Haryana State



Blank area is fresh water zone already developed, Two thirds of remaining groundwater is Marginally Saline and saline and poses problems of utilization

SUGGESTED AGRICULTURAL LAND REFORM

Agriculture in India must be brought in cooperative sector and the minimum size of a farm should be increased to 10 ha.

Most of environmental reactions are slow and rather irreversible. Therefore, no further damage should be done to the land-soil-water ecosystem and all such actions that can cause damage to natural resources must be totally withdrawn in steps.

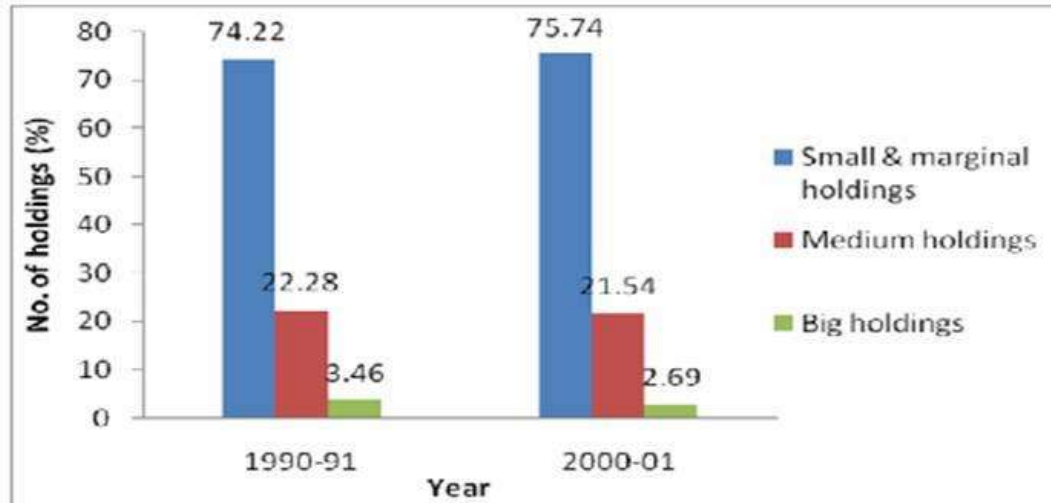


RECOMMENDATIONS

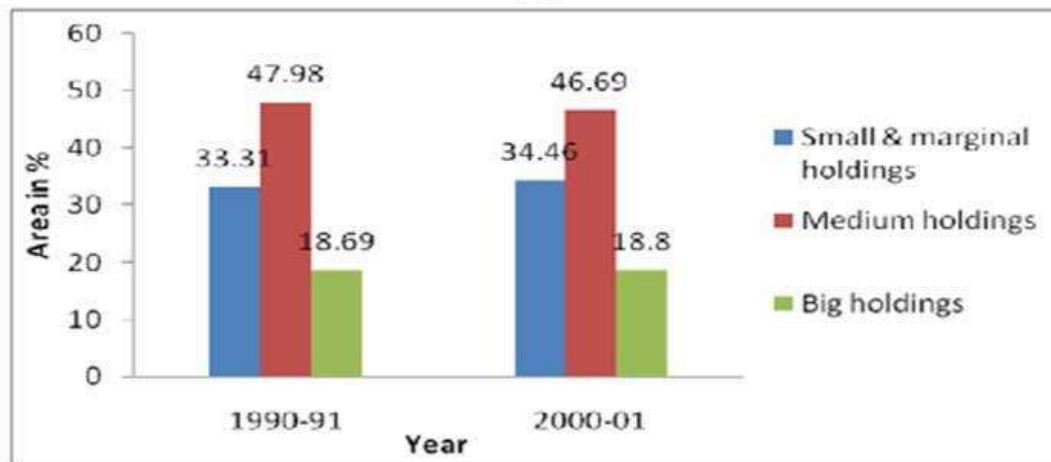
- ❖ **Restricting N-fertilizer dose to 120 kg/ha; use of bio-fertilizers and green manures.**
- ❖ **Changing crop pattern from alternating wheat & rice to alternating wheat or rice with beans and pulses to enhance natural nitrogen level in soils.**
- ❖ **Enhancing sprinklers/drip irrigation (for holdings > 10 h)**
- ❖ **Increasing minimum size of a farm holdings to > 10 ha by starting ‘cluster cooperative agriculture’.**
- ❖ **Planning artificial recharge of aquifers in Eastern Haryana from flood water of Yamuna river.**
- ❖ **Use of surplus water of Sutluj-Beas rivers; Early completion of Satluj – Yamuna link canal. Haryana-Punjab interstate dispute on this canal, continuing for last 3 decades, needs immediate settlement.**
- ❖ **Groundwater is a precious and critical resource to be used judiciously.**



Social Structure of Agricultural Land Holdings



(a)



(b)

Evolution of agricultural land holdings in Kurukshetra district (1990-91 to 2000-01); (a) Number of holdings (b) Area in different categories

SOCIAL STRUCTURE OF AGRICULTURAL LAND HOLDINGS

Any suggested agricultural reform must automatically fail should it neglect the social structure of agricultural land holdings which is depicted in the preceding bar diagram. About 74% small and marginal holdings (< 3ha) accounting for 33% cultivated land by area, another 22% are medium holdings (3-10 ha) accounting for 48% land by area and the remaining 4% holdings are big holdings (10 ha and above) accounting for 19% cultivated land area.

SMALL AND MARGINAL HOLDINGS CANNOT SUSTAIN THE INPUT COST OF MODERN AGRICULTURE.



Thank You



ATTENTION FUNDING AGENCIES !!

It has been observed during past three decades that the interests of small and marginal farmers are often sacrificed. For instance the use of drip system and sprinklers conserves 50-70% of irrigation water but being cost intensive it will not attract the owners of 74% small and marginal holdings; 22% medium holdings would require heavy subsidies. The benefits of policy would therefore be accrued in favor of 4% big farmers. As most such projects are financed by international funding agencies IMF/WB/ADB that does not allow Central or State Governments to offer handsome loan/subsidy to the small and marginal farmers of developing countries. However, these international agencies continue to allow heavy subsidies to the farmers of developed world. Even WTO does not seem to come forward to help farmers of the developing countries.