Sustainability of cultivated Land and Underground Water

(A case study on South-East Hisar District (Haryana) villages)

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Abstract:-

At the present time India population on the 2nd no. in the world and the growth rate is very high in comparison to other country. Population fundamental needs are increasing day by day. In **India** 21.9 % of the **population** lives below the national poverty line according 2011. To fulfill the requirement of food, shelter clothes and fresh water, man continuously changing to our earth natural phenomena. He is continuously increasing cultivated land as well as deforestation also and input of maximum fertilizer to gain maximum production of crops. In this situation water table and water composition is changing that is harmful for our ecosystem.

Sustainability means, man's all work should be complete without harm to any natural heritage like as water, soil fertility and other components of ecosystem. On this planet mainly are three kingdom of biosphere like as lithosphere, hydrosphere, and atmosphere. In which biosphere is complex form in this entire sphere?

Like air, water and fertile soil is very essential to live life on earth. Although much of the earth's surface is covered with water, very little of it is suitable for human consumption and more than 12% of the world's population does not have fresh ground water to drink. Water is also necessary for all biotic phenomena, industry and as well as agriculture so water allocation planning is necessary for the management of our water resources. It also means maintaining to all natural components such as fresh water, soil, vegetation and clean air.

Real India is containing in rural India. According 2011 census 68.84 % population live in rural areas that main occupation is primary activity in which first of all is agriculture. Our country economy is depending on agriculture productivity and around 70 % population of our country is earning directly or indirectly through agriculture industry.

Post-independence in India agriculture productivity was very low up to 1970. And India population is growing very fast rate then Green Revolution implemented in many parts of India by M.S .Swami Nathan and cooperation by Indian government. After that our productivity per hectare is growing season to season due to mechanism and HYV seeds. But today all farmers and all workers' thinking that joint with agriculture industry has become only to earn more and more.

By this research paper we want to explain that agriculture cropping pattern system is changing in India as well as Hisar (Haryana) year to year for growing his income standard.They are excessive use of fertilizer and ground water that is not proper applicable for his cash crops.We find that in this study area 90 % farmer take mainly two crops in a year that is Paddy and Wheat.

By Ch. Charan Singh Haryana Agriculture University " s Water and Soil Department lab report display to this study area testing report that study area is carrying capacity of different crops like as horticulture ,floriculture ,cotton ,rice ,wheat ,maize ,barley and sugar cane etc .

All farmers of this area are not aware for future productivity and harmful effect on our health. So by this research paper we want to aware to all farmers that excessive use of weedicides, pesticides and fertilizer that will change to the water composition decrease to soil fertility. Thus by this progressive farmer "s tendency that time is not far away that their cultivated land will convert in barren land.

Key words: Cultivated, Underground, Productivity, Farmers, fertilizers etc.

Introduction

Field work is a vital instrument for understanding the world through direct experience. It is the process of observing and collecting data about people, cultures and natural environment. Field work is the heart in geographical study, if we go to field and surveying about that matter then we can never forget that experience because that imprint on our mind .Various geographers like Herodotus, Humboldt, and D. Stamp etc. have proved the importance of field work from time to time.

We are explaining by this paper that agriculture cropping pattern is changing time to time in everywhere according their demands. We have study in which area all farmers wants to grow his economic standards.

Cultivable land define to such surface area that full fill to human hunger by any natural product and maintain to food chain in this biosphere .

Ground water is such element that is covered by many layer of soil, on which depends our life as well as economy. It is equal to our provident fund. We should conserve it.

Agriculture is such a type activity that is directly linked by surface area and fulfill to all fundamental needs of human being and livestock.

Cropping pattern is a yearly sequence and spatial arrangement of crops in a particular given area.

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Study Area

The study deals with the changing of agriculture cropping pattern in India as well as Hisar (Haryana) that is affected to soil fertility , water table and chemical composition of underground water .

Here our main focus is on Hisar district .which is located in west direction of Haryana state. South &South-East direction of Hisar is low fertility due to desertification and middle, North, North-West direction is very rich sector in agriculture production due to its physical condition. In this study area 154 village, 4 tehsil and 9 block in this district.

Objective

- To aware about sustainability of cultivated land .
- To know the maximum concentration of the crops in this study area.
- To aware under groundwater composition.
- To know underground water table on which depth in every direction of study area.
- To identify the canal irrigation is require in which direction of study area.
- To know P.H. (Potential Hydrogen) values of soil and water of this region.
- To highlight the cropping pattern of agriculture adopted by these farmers. Is that applicable towards to water and soil fertility?

Methodology

Research methodology is main part of any research project. Our research is mainly on based on primary data .we take some samples in different direction and distance of this study field and tested by C.C.H.A.U. Hisar. Study area map is interpreted by hand work with help of cadastral map to pat war office.

Map. Location of Hisar

Source: secondary data on Haryana web site.

Sample information to different direction to the Sindhar village

Sample no.	Land Owner	Village	Water source	Depth	Sample distance to sindhar village
1	Jiyalal	Singwa Ragho (S2)	Handpump	30	6.5
2	Sandeep	Barwala (B1)	Tubewell	35	15.0
3	Tekram	Loohari (L)	Well	22	19.0
4	Omparkash	Rajli (R)	Tubewell	40	7.0
5	Naresh	Narnaund (N)	Tubewell	25	31.0
6	Balram	Sisaaye (S3)	Tubewell	30	29.0
7	Vikram	Sindhar (S1)	Well	18	2.0
8	Krishan	Khanpur (K)	Handpump	22	5.0
9	Baldev	Ghiray (G)	Tubewell	35	7.5
10	Dalip	Mirjapur (M2)	Handpump	24	16.5
11	Jagdeep	Hansi (H)	Well	23	28.0
12	Gurnaam	Dhansu (D)	Tubewell	45	14.0
13	Ranbir	Byana Khera (B2)	Tubewell	35	14.5
14	Palaram	Masudpur (M1)	Tubewell	40	4

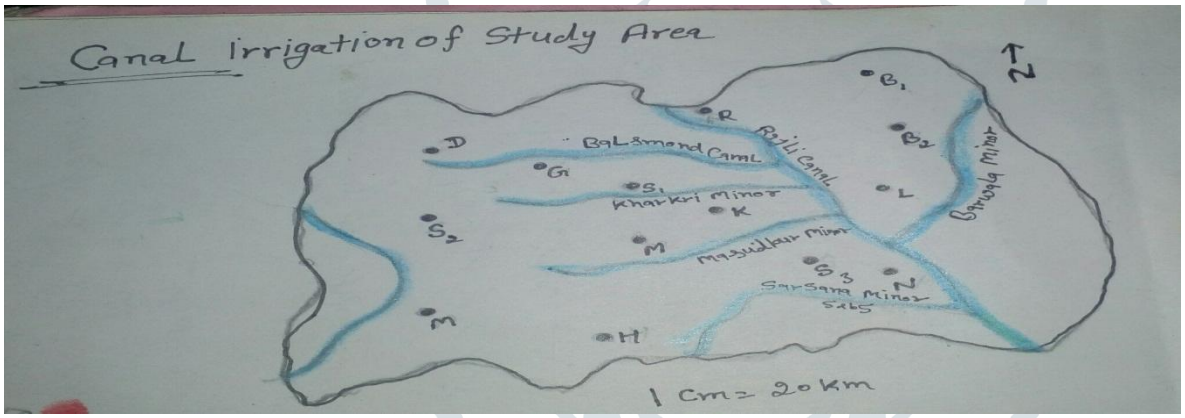
Source: Primary Data of Hisar district 2017

C.C.S.H.A.U. Hisar Lab report

Sample no.	Lab no.	EC*10^6	CL	Ca	Ca+Mg	HCO3	Suggestive class
1	HA-1	420	2.0	1.0	2.5	2.0	A1
2	HA-2	1460	4.0	3.0	8.0	6.0	A2
3	HA-3	3920	16.0	7.0	20.0	4.0	B2
4	HA-4	1620	4.0	4.0	11.0	6.0	A3
5	HA-5	530	2.0	1.2	3.0	2.0	A1
6	HA-6	500	2.0	2.0	5.0	2.0	A1
7	HA-7	1400	6.0	3.2	9.0	6.0	A2
8	HA-8	430	2.0	1.2	3.0	2.0	A1
9	HA-9	1430	4.0	3.2	9.0	4.0	A2
10	HA-10	3620	1.0	6.0	17.0	6.0	B1
11	HA-11	620	2.0	2.2	6.0	3.0	A1
12	HA-12	600	2.0	1.2	3.0	2.0	A1
13	HA-13	1940	2.0	6.0	17.0	4.0	A3
14	HA-14	2750	8.0	4.5	13.0	6.0	B1

Source: Analysis Report by C.C.S.H.A.U. Hisar (Haryana) 2017

Drainage pattern of study area

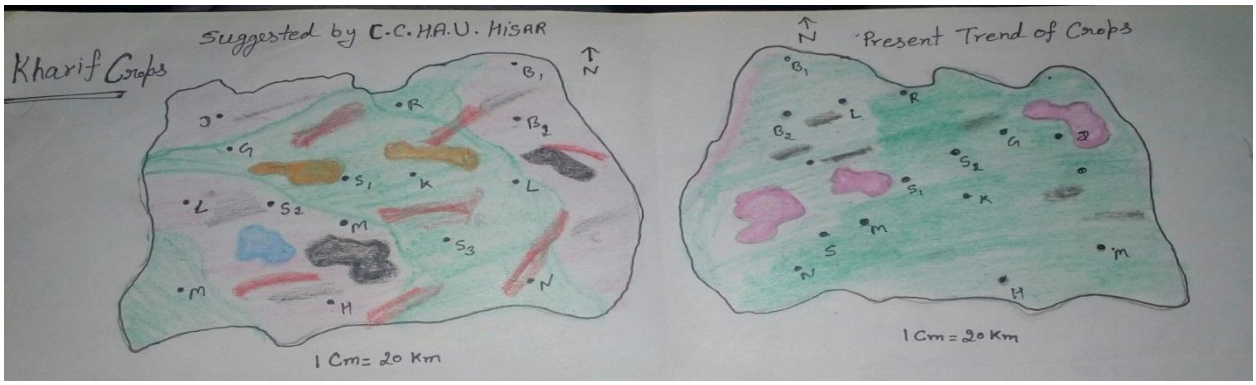


Rabi Crops trend

Source: by field observation and manual work according cadastral map.

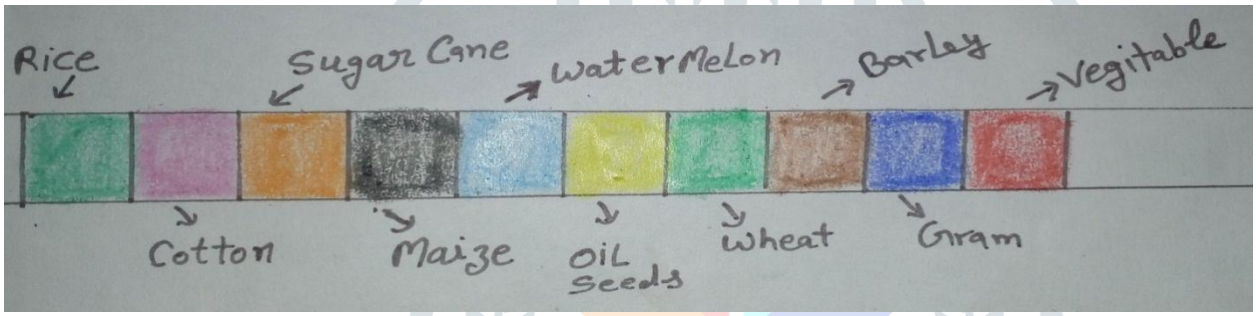
Kharif Crops trend

Suggested by C.C.H.A.U.Hisar Present trend of Agriculture



Source: by field observation and manual work according cadastral map.

Legend:-



Study area cropping pattern scenario Hisar

In modern time period, man's capitalistic thinking is growing day by day and he wants every time more and more production. After research we find that in this study area paddy is grown approximately 93 % in Kharif season although their Paddy should be grown approximately 43% and some other crops should be grown according C.C.S.H.A.U.HISAR such as Cotton crops, Jowar, Soyabean and Maize etc.

And in Rabi season major crops is grown wheat due to heavy consumption and other all crops is ignorant.

Conclusion and solution

- We find out in this study area in Kharif season mainly Paddy is grown approximately above 90% and remained areas is covered by cotton crop.
    - ✓ **In this region rice crops should be controlled and gradually stopped and suggest about legume crops so that fertility will be maintain.**
- And in Rabi season maximum wheat is grown approximately above 85% areas and remained areas is covered by oilseed and barley crops.

- ✓ **In this season crops should be change time to time with coarse grains.**

- Over all depth of water table in mid of study area is approximately 23-25 feet and in north-west between approximately 35-45 feet and south-west and south-east is carrying to water table approximately to 20 feet.

  - ✓ **North-west direction of study area government should be efforts to increase canal irrigation so that can change his water table level or increasing to dripping irrigation**.

- Due to lack of canal irrigation 38 % cultivated land of this study area is suffering to low productivity.

  - ✓ **So there should be maximum effort in south-east and north-east direction of study zone by government and his strong good will can be reforms to these farmer 's future by any polyhouse schemes on the very low rate interest or subsidy.**

- In this study area approximately 15 % cultivated land is suitable for horticulture, floriculture and vegetables.

  - ✓ **These crops can give more benefit to these farmers because this study area is lies in 15 to 25 km in radius of the market.**

  - ✓ **All farmers should be used in his farm cow dung as possible as, so that their farm area soil productivity and your health should be maintain in positive sense in future.**

  - ✓ **PH (potential hydrogen) value of this study field is on normal stage that not effect to productivity**.

  - ✓ **Farmers of this area scan reforms his economic condition if they implement all crops in his cultivated areas ex. If they grow vegetable in suggested areas they can take more and more productivity and more wealth.**

  - ✓ **Von Thunen 's thoughts is properly implemented in this study area and give a message to all farmers that they should grow crops according soil fertility and consumption of product in the market.**

We find that in this study area that soil and water quality to giving us a message that in this area can be maximum crop diversification .But these farmers use mainly two crops Wheat and Rice. This cyclic process of these two crops will destroy to fertility in some year ago.

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