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## *Impact of Water Logging and Salinity on Socio-Economic Conditions of People in Rohtak District of Haryana*

**Parul**

M.A. in Geography,  
Maharshi Dayanand University,  
Rohtak, Haryana, India.

*Abstract: Most people agree that irrigation is a good way to boost crop yields, but using too much canal water can cause new issues like floods, waterlogging, and high salt levels. Waterlogging and high salt levels are problems that can make farming not work in the long term. Not only does it hurt crop yields, crop trends, and soil richness, but it also hurts building sites, roads, trees, and crops. Too much water kills plant roots, and too much salt kills all plants and fruits. As a result, farming production is greatly reduced. This has been a problem for decades in Haryana state. There are two major types of waterlogging: waterlogging caused by humans and waterlogging caused by nature. There are areas of past water that make the ground wet in places where there is natural waterlogging. Anthropogenic waterlogged areas are areas with a lot of water that are mostly caused by people and other things. Too much water and salt in the air change the biological environment, which in turn changes food output and causes social and economic problems. In the long run, places that are always wet cause diseases to spread to nearby habitats.*

*Keywords: Water Logging, Salinity, Socio-Economic Condition, Biological Environment.*

### I. INTRODUCTION

The main problems in the study area are too much water and saltiness. This problem has made things very bad in a lot of the area every year, especially after the summer rains. A lot of the time, growing crops get hurt or the planting season is pushed back, which results in low output. In 1975 and 1995, there were very bad floods in the study area that made this problem worse. In 1975, most of the area was flooded for many months, which caused problems in most of the towns. This year, 86% of the area had trouble with waterlogging. Around 60% of the area was hit by waterlogging in 1995.

### II. MAIN OBJECTIVE

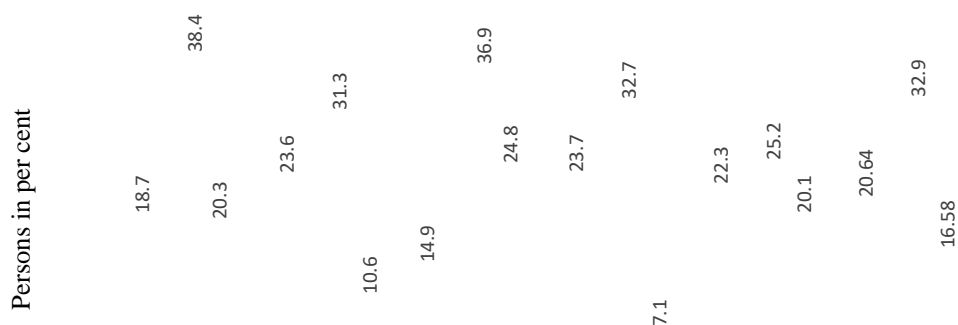
The Impact of degraded soils on socio-economic conditions of the people to be studied.

### III. RESEARCH METHODOLOGY

The methodology has been adopted based on the objectives of the study. Both analytical and descriptive approaches are used based on the sources of data. Causes of water logging and salinity have been identified with the help of field survey and secondary sources. Measurements of ground water quality in the study area and its socio-economic effects are highlighted with the help of descriptive approach

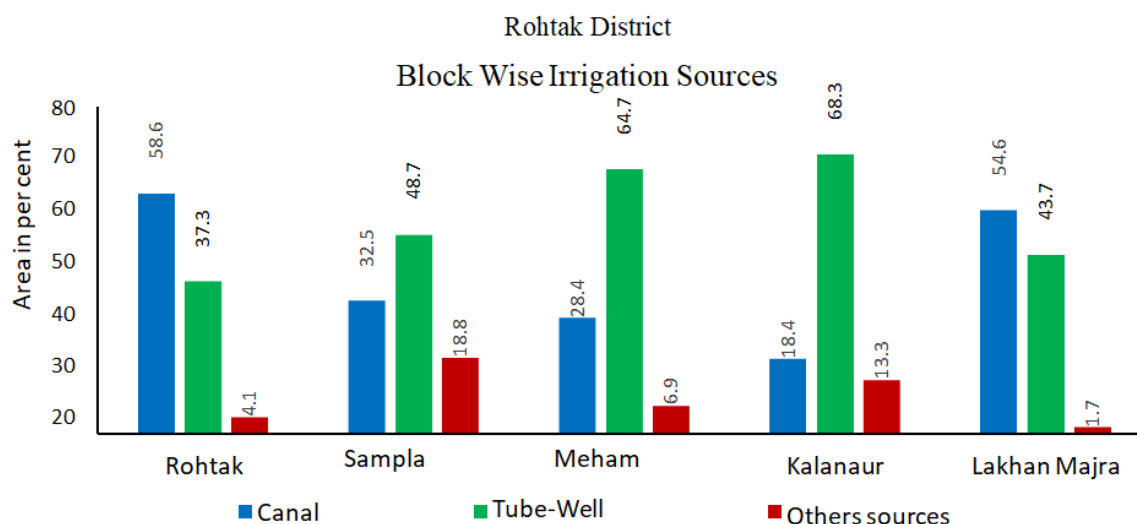
### IV. DATA COLLECTION





Source: Based on field survey

Fig. 1.2



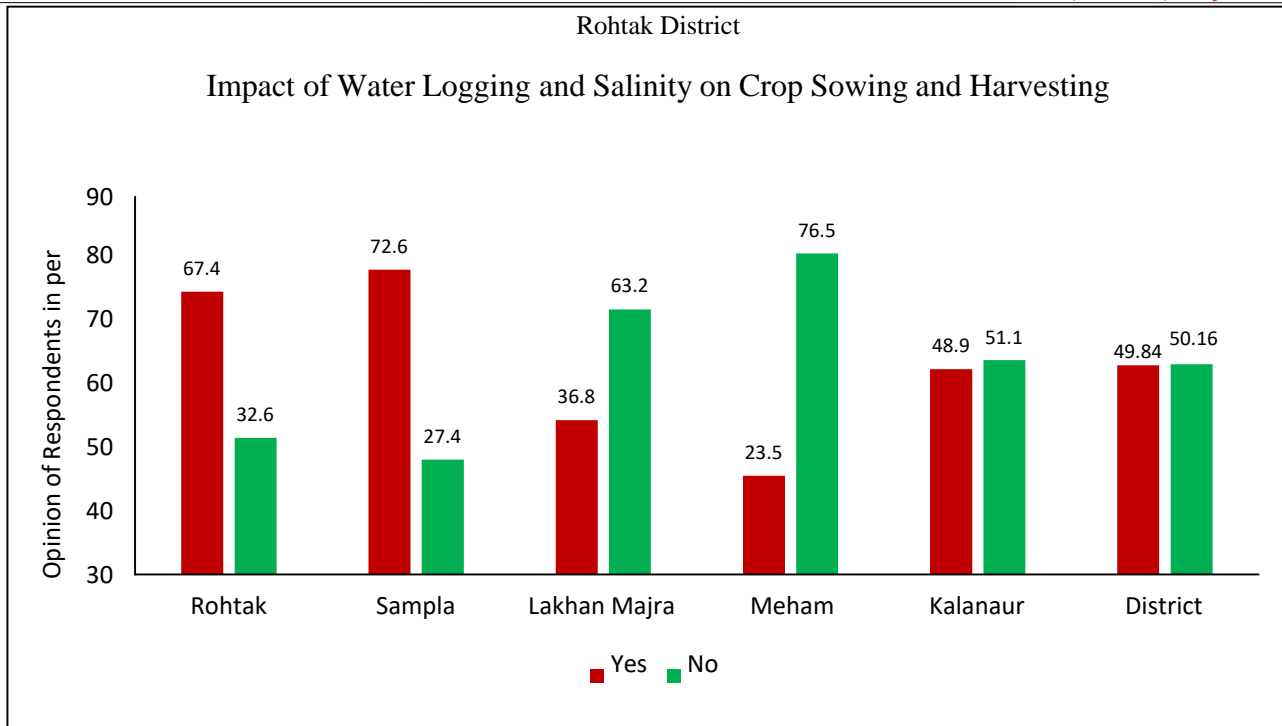
Source: Based on field survey

**Impact of Water Logging and Salinity on Crop Sowing and Harvesting**

Farmers are having a lot of problems because of too much water and salt in the soil. This issue has been going on for a long time, and it has caused many changes, such as a drop in the quality of groundwater, changes in when crops are planted and when they are harvested, and changes in the order and production of crops. When there is too much water, it makes it hard to plant and gather crops. There will be a good crop yield if the crop is planted and picked at the right time. A small change in the planting time can affect how many crops are grown.

During the field poll, about 49.84% of people in the study area said that waterlogging affects when crops can be planted and when they can be harvested. That's 67.4% of people in Rohtak block, 72.6% of people in Sampla block, 36.8% of people in Lakhan Majra block, and 23.5% of people in Meham block. 489.9% of people who answered in the Kalanaur block said that waterlogging changes the times when crops are planted and harvested (Fig. 1.3).

Fig. 1.3

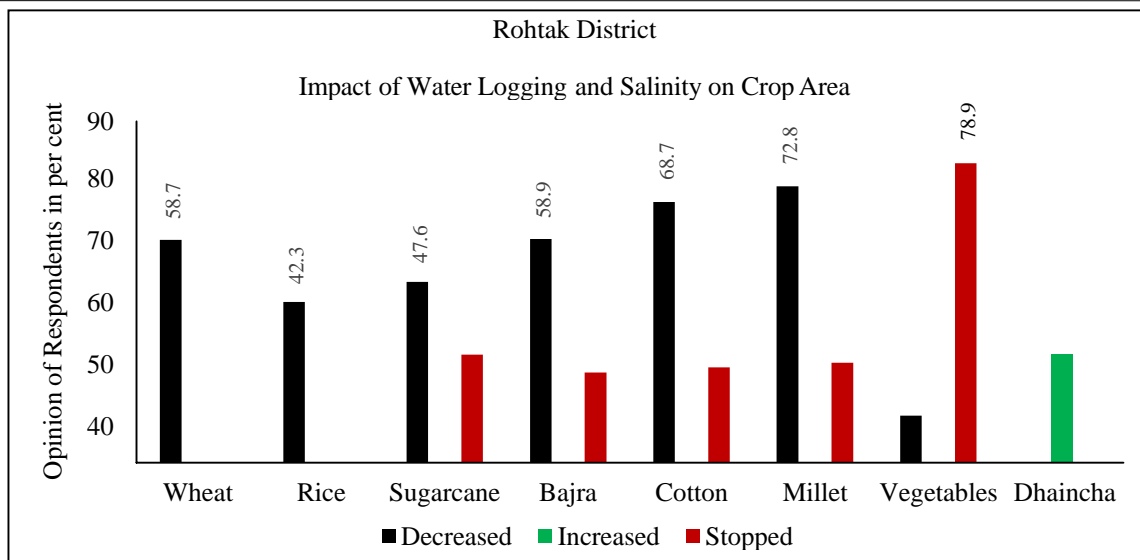


Source: Based on field survey

### Impact of Water Logging and Salinity on Crops Area

Because there is less good groundwater, the area used for different crops in the study area has changed a lot. Certain common crops aren't being sown at all, or the area they're growing on has shrunk by a lot. People are interested in new crops. For instance, in the Lakhan Majra and Meham blocks, lentils, veggies, sugarcane, jawar, gram, and barley were usually planted over a big area when the problem wasn't as bad and there was good groundwater for irrigation. As problems with flooding and high salt levels got worse, farmers turned to crops like wheat, rice, and jawar. There are also crops being planted, like mustard, sugarcane, cotton, and others. However, the places where these crops are being planted have decreased because the groundwater is salty and can't be used for watering. Figure 1.4 makes it clear that the area under crops is decreasing because the quality is getting worse and there isn't enough irrigation water. 58.7% of those who answered said that the area used to plant wheat had decreased, 58.9% said that the area used to plant bajra had decreased, 68.7% said that the area used to plant cotton had decreased, and 72.8% said that the area used to plant millet had decreased. On the other hand, 78.9% said that the area used to plant vegetables had stopped, and more than 25% said that they had not planted anything. One hundred people who answered said that planting sugarcane, cotton, and wheat had stopped in the study area. 286 of those who answered said that the area used for planting dhaincha has grown in the study area.

Fig. 1.4



Source: Based on field survey

### Impact of Water Logging and Salinity on Crop Sequence

The field study shows that farmers are planting crops in different order in different parts of the area. Table 1.1 shows the order of crops that the farmers chose. In Rohtak area, the main crops are rice and wheat. With 25.8% of the land used for these crops, farming wheat and rice together has put it at the top of the list. The second important crop sequence is wheat, rice, and sugarcane, which make up 13.7% of all the crops that were polled. It is followed by wheat, rice, sugarcane, and Jawar, which make up 9.2%; wheat, bajra, and jawar, which make up 8.4%; wheat, bajra, mustard, and cotton, which make up 7.8%; and then wheat, rice, bajra, mustard, and jawar, which make up 7.4%; wheat, rice, clover, and jawar, which makes up 6.9%; and finally, wheat, rice, sugarcane, Jawar, and clover, which make up 6.7%. It was found during this field study that the order of crops in the area is linked to the amount of good irrigation water that is available.

**Table: 1.1 Rohtak District: Crop Sequence**

Sr. No.	Crop Sequence	Area in per cent	No. of Farmers (in per cent)
1.	Wheat, Rice	25.8	25.9
2.	Wheat, Rice, Sugarcane	13.7	14.2
3.	Wheat, Rice, Sugarcane, Jawar	9.2	11.7
4.	Wheat, Bajra, Jawar	8.4	9.7
5.	Wheat, Bajra, Mustard, Jawar	8.2	8.6
6.	Wheat, Bajra, Mustard, Cotton	7.8	7.4
7.	Wheat, Rice, Bajra, Mustard, Jawar	7.4	6.6
8.	Wheat, Rice, Clover, Sesbania rostrata	6.9	6.2
9.	Wheat, Rice, Sugarcane, Jawar, Clover	6.7	5.4
10.	Wheat, Rice, Vegetables, Millet	5.9	4.3

Source Based on field survey.

### Impact of Water Logging and Salinity on Crop Production

Cotton, sugarcane, wheat, and rice are the main crops grown in the study area. All of these crops have been greatly hurt by too much water and salt in the soil. The study area is now waterlogged because it doesn't have enough drains. Because of this, food output has dropped by a lot. The output of rice crops was 22 quintals per acre and that of wheat crops was 25 quintals before this problem. It was only 14 quintals and 15 quintals per acre for those two crops because of too much water and salt (Table 1.2). Also, the yields of other crops have dropped very badly. In many villages in the study area, including Semple, Baniyani, Kharkada, Anwal, Baland, Chuliana, and Kharanti, crops like gram, mustard, cotton, grains, oilseeds, and sugarcane are no longer grown at all. However, since the sub-surface drainage system was put in place, things are slowly getting better for farms, and they are getting higher returns.

### Impact of Water Logging and Salinity on Farmer's Income

Farmers make most of their money from the crops they grow, the prices of those crops, and the amount and cost of fertilizers and chemicals they use. It was found during the field survey that most of the farmers in the study area had problems with too much water and salt in the soil.

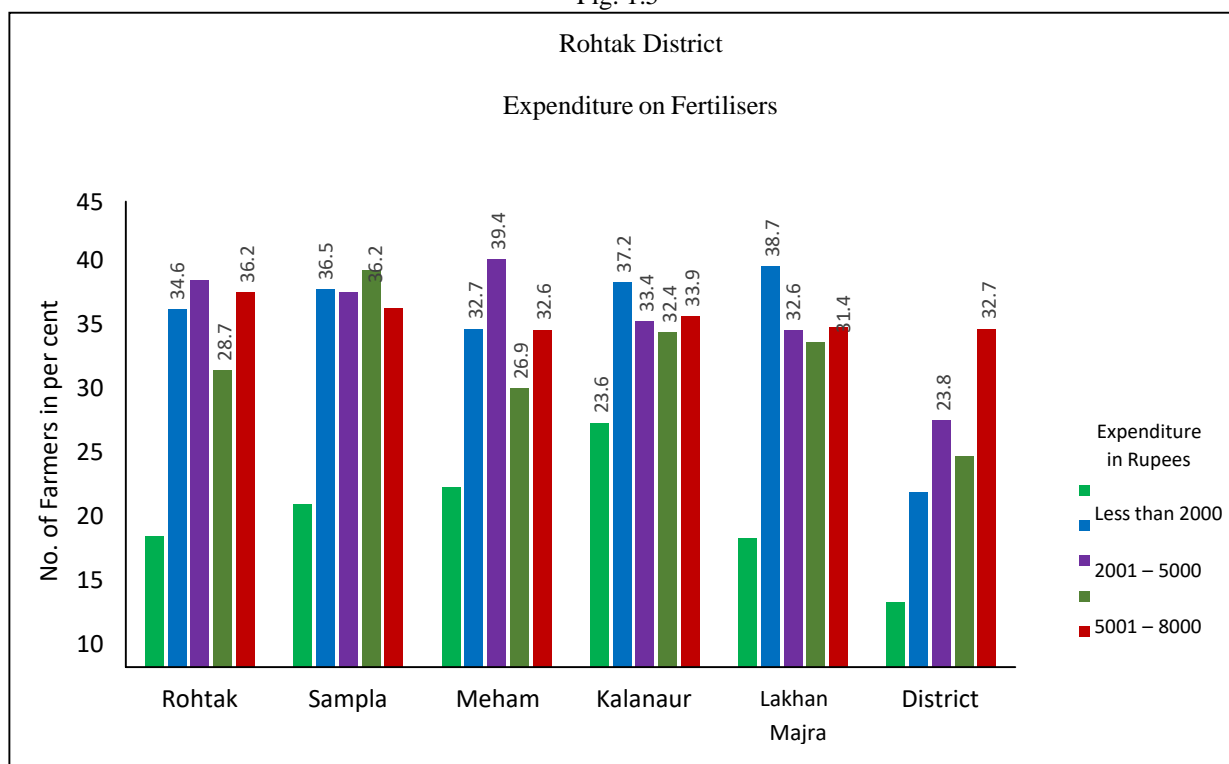
**Table: 1.2 Rohtak district: Crops production**

Crops	Production before problem (quintal/acre)	Production after problem (quintal/acre)	Changes (in per cent)
Wheat	25	15	40
Rice	22	14	36.4
Sugarcane	300	240	20
Millet	11	8	27.3
Mustard	7	5	28.6
Bajra	15	12	20

Source: Based on field survey.

To get around this problem, farmers are using more and more pesticides and fertilizers on their farms. Fertilizers and pesticides cost between 5000 and 1000 rupees per acre on average. This adds to the costs that farmers already have. Three-quarters of the farmers surveyed spent more than eleven thousand rupees per acre on fertilizers. Twenty-four percent spent between eight thousand and eleven thousand rupees per acre, twenty-three thousand and eight hundred rupees per acre, sixteen thousand rupees per acre, or less than two thousand rupees per acre (Fig. 1.5).

Fig. 1.5

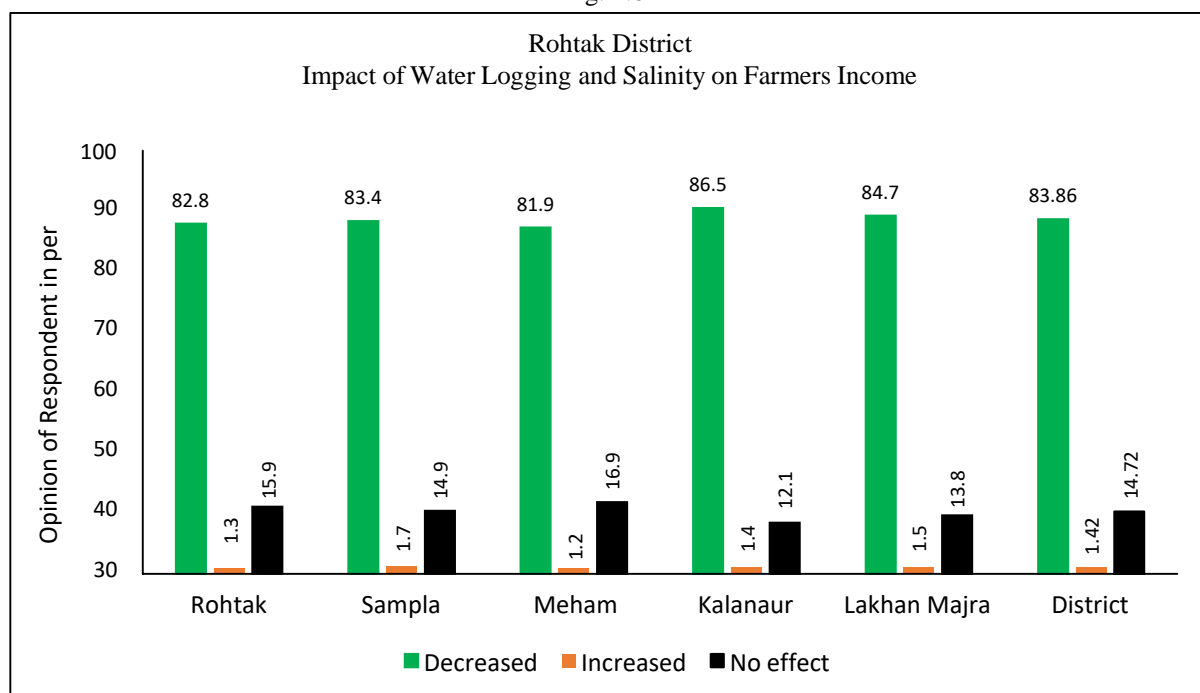


Source: Based on field survey

It was found that farmers have to buy vegetables, pulses, and grains for their families. However, they would grow all of these things themselves if there was good groundwater quality and quantity for farming. In the study area, however, farmers can't grow these things because of problems with waterlogging and salinity. This takes more money away from their pay. Also, bad drinking water directly hurt people's health, so a lot of money is spent to keep the water clean and keep people from getting sick, which has an effect on income. 83.86% of people who lived in the study area said that farmers' income went down because of problems with waterlogging and saltiness. It was said by more than 81% of people in Rohtak and Meham block, 83% of

people in Sampla and Lakhan Majra block, and 86% of people in Kalanaur block that farmers' income went down because of waterlogging and salt problems (Fig. 1.6).

Fig. 1.6



Source: Based on field survey

### Impact on Occupation

Farmers are looking for new ways to make money because the water quality is getting worse, there isn't enough water available, and they aren't making enough money. People from every part of the Rohtak area are moving to towns to find work. But because they weren't educated, a lot of them couldn't get good jobs outside the town. A lot of small farmers work as car drivers, laborers, and other jobs. Rich farmers, on the other hand, work in agriculture, provide transportation services, and run other businesses. While doing the field study, it was found that 41.44 percent of farmers in the area do other things besides farming. It was found that 58.6% of farmers in the Rohtak block do more than just farm. In Kalanaur block, on the other hand, only 23.7% of people do other jobs in addition to farming. In Rohtak block, 27.2% of people have private jobs, 12.4% drive taxis, 10.8% have started shops, and 6.2% work in agriculture and other jobs (Table 1.3). In the same way, people in other blocks do different kinds of work in addition to farming.

**Table: 1.3 Rohtak district: Block wise occupation (in per cent).**

Block Name	No. of farmers	Shop	Labour	Auto driver	Job	
					Private	Government
Rohtak	58.6	10.8	6.2	12.4	27.2	2
Sampla	48.7	9.6	5.3	10.1	22.7	1
Meham	36.8	9.4	3.8	6.3	16.3	1
Kalanaur	23.7	6.7	2.2	3	10.8	1
Lakhan Majra	39.4	8.4	4.5	9.7	15.2	1.6
District	41.44	8.98	4.4	8.3	18.44	1.32

Source: Based on field survey.

### Impact on Future

Rohtak area has a big problem with waterlogging and high salt levels. It would become a big problem in the future if it wasn't controlled. When asked in the field, 98.4% of people in Rohtak area said that their future is in danger. A total of 98.2%

of people in Rohtak block, 98.9% of people in Sampla block, 97.8% of people in Meham block, 98.7% of people in Kalanaur block, and 98.4% of people in Lakhana Majra block said that salinity and waterlogging would have an effect on their future.

## V. CONCLUSION

Since the canal irrigation system was put in place in Rohtak district, the ground water level has been rising at a worrisome rate. Waterlogging is making crops less productive and changing the way they are grown in flooded command areas. Some crops, like cotton, wheat, mustard, feed, and others, can't handle too much water or salt. Many towns have had to give up goods like sugarcane, cotton, mustard, beans, gram, veggies, and more because of this problem. To get around this problem, farmers are using more and more fertilizer, which has made the cost of production go up in the study area. Farmers' pay was harmed by this problem in some way. It also has an effect on the farmers' health. Something needs to be done to make the study place better. To solve this problem, the right managerial and technical system needs to be built. Waterlogging and salt problems can be lessened by managing the sewage system in a planned and correct way. You can get rid of this twin problem by planting Eucalyptus and Sesbania rostrata. Farmers who are educated and aware of the problem can help solve it in a big way.

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