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Conservation of Water in Drought Areas

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Abstract **- India is one of the agricultural economy based country. Despite, the share of agriculture sector to GDP of the country is only about 24%, 70% of Indians are dependent on farm incomes, and about 60% of farm cultivation depends on rains. In past few years there has been increase in extreme weather events such as drought, flood, heat and cold waves, strong wind etc. India suffered of drought in 2002 with seasonal June – September all India rainfall 19% below normal after all India drought occurred during June – September, 1987. Droughts have severe economic, environmental and social impacts. Areas having poor rain could be detected in advance. It is possible to reduce agricultural losses by advanced prediction of poor or no rain situations, timely dissemination of weather based agro-advisories to planners and farmers.**

Keywords**- despite, agriculture sector to GDP**

I. INTRODUCTION

The word "drought" is a relative term, and is defined differently by different regions and sources. Drought defines by a Webster's Dictionary as "a long period of no rain", though this is an inadequate definition for the water supply industry. Wikipedia describes drought in stages and effects " As a drought persist, the conditions surrounding it gradually worsen and its impact on the local population gradually increases. Drought go through three stages before their ultimate cessation. High scarcity of drinking water might be faced in these villages. Though the GR dated 25 November 2014,

government has declared drought – like situation in 1959 villages from 22 districts. In 2011 – 12, heavy drought situation was created in Western Maharashtra and Marathwada. It is observed that after every 2 years, drought situation is created in some areas . A meteorological drought occurs when precipitation consistently falls short of average levels for periods of months or years. A hydrological drought occurs when the amount of water needed by crops for growth exceeds the amount available in the soil .

II. NEED OF STUDY

In recent years, it seems that the pattern of monsoon is changing. There is a radical change in the pattern of arrival of monsoon and its journey across the northern region. Monsoon covers its area before its regular time table and it stays back till last weeks of September from last few years. In most of the areas of Maharashtra, the rainfall in first ten days of October was recorded more than that in the month of June this year.

Table I: Comparison of rainfall in June & Oct 2012 rainfall in mm.

S.N.	District of Maharashtra	June	October
1	Satara	69	194
2	Sholapur	41	117
3	Kolhapur	71	89
4	Aurangabad	77	56
5	Nashik	37	90
6	Pune	35	120
7	Mumbai	177	124
8	Sangli	45	77
9	Ahemadnagar	5	49
10	Parbhani	82	89

In the year 2017 Maharashtra state received only 89.1% of rainfall of 33 districts, nearly 10 districts received rainfall between 50% to 75%. Around 15 districts received rainfall between 75% to 100% while 7 districts received more than 100% rainfall Jalana, Aurangabad, Beed & Osmanabad are the most affected districts in Maharashtra. The state govt. has announced total 6250 villages as drought affected regions among which 753 villages are from Aurangabad district, 970 from Jalana district while Beed & Osmanabad share 685 & 438 villages respectively. The shortage of fodder across the state has made the situation more dreadful as the state has to spend Rs. 6 Crore daily on fodder, the bill so far is pegged at Rs. 235 crore.

III. METHODOLOGY

1. Biosand Filtration Process

A bios and filter (BSF) is a point of use water treatment system adapted from traditional slow sand filters. Bios and filters remove pathogens and suspended solids from

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water using biological and physical process that takes place in a sand column covered with a biofilm. BSFs have been shown to remove heavy metals, turbidity, bacteria, viruses and protozoa. BSF also reduce discoloration, odor and unpleasant taste. Studies have shown a correlation between use of BSF and a decrease in occurrence of diarrhea Because of their effectiveness, ease of use, and lack of recurring costs, biosand filters are often considered appropriate technology in developing countries.

Fig.1. Biosand Filtrations Process.

2. Desalination Process

Desalination is process primarily done in developed countries with enough money and resources. If technology continues to produce new methods and better solutions to the issues that exist today, there would be a whole new water resource for more and more countries that are facing drought, competition for water, and overpopulation. Though there are concerns in the scientific world about replacing our current overuse of water with complete reliance on sea water, it would undoubtedly be at least an option for many people struggling to survive or maintain their standard of living.

Fig.3. Ceramic Water Filter.

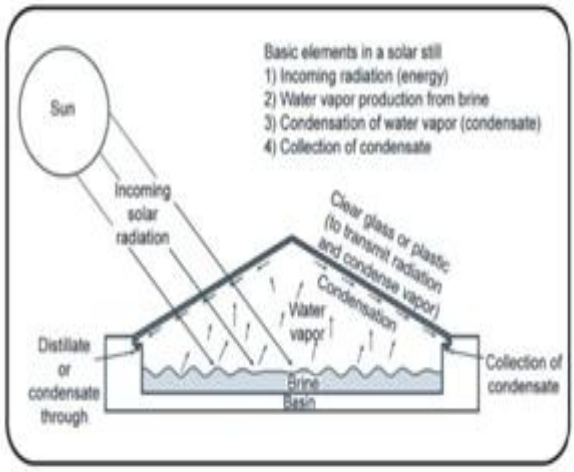

Fig.2. Desalination Process.

3. Ceramic Water Filter

Ceramic candle filters basically consist of an upper and a lower container, one or more ceramic candles in between, a tap and a lid. Usually the containers have a diameter of about 30 by 25 cm depth for a treatment capacity of about 8 L and a flowrate of 1-2 L per candle. The ceramic candles are screwed into the base of the upper container. To the lower container is attached a tap that allow to withdraw safe water without risking recontamination. A lid is placed on top of the upper container to prevent contamination. Candles can have very slow flow rates, so it is common to use two or more candles in one filter. The candles are made up of clay and the container can be made from plastic, aluminum, copper, steel or clay material. Though clay containers keep water cold and tasty, due to its fragile nature other materials nowadays replace it.

4. Result

Effect of filtering raw water with a 600 micrometer pot filter on total hardness, turbidity and electrical conductivity			
Parameter	Water Sample		Standard
	Raw	Filtered	
Total hardness (mg/l $CaCO_3$)	32.21	14.61	0-150*
Turbidity(NTU)	8.31	1.13	1-5*
Electrical Conductivity (micros/cm)	51.78	35.05	700.0*

IV. CONCLUSIONS

The filteration rate was found to increase with the grain size of the saw dust and height of the water column in the pot. These factors need to be taken into account when designing pot filters for practical use.

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