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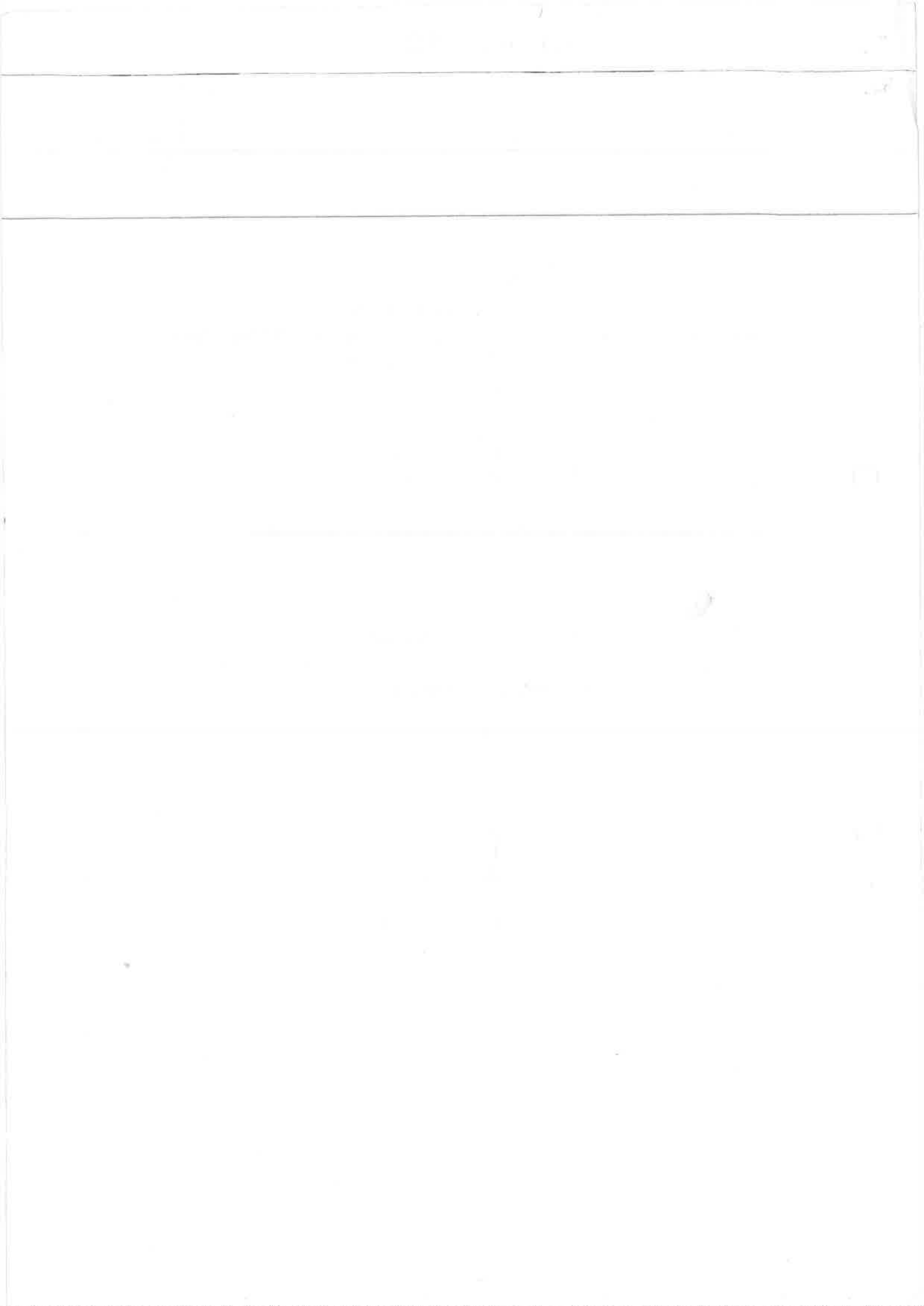**Editorial Board**
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Examine Presents Status of Soil Productivity for Managing Cropping Pattern in *Satana* Tehsil Of *Nashik* District : *Maharashtra*

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Abstract :-

Soil is a natural resource that can be produced by natural factors and divided into different soil categories, each soil types have distinct characteristics that provide growing benefits and limitations to the agriculture & can be categorized into sand, clay, silt, peat, and chalk and loam types of soil based on the different size of the particles within a soil. Soil is the most mixed component and is also highly sensitive to management for agriculture purpose. Soil is a limited natural resource on the farm. Soil is the limited natural resources on the farm and soil productivity is influenced by the physical, chemical and biological properties, that's why soil properties is essential for nutrient planning and for managing cropping pattern in farming activity.

With the help of above discussion, I have taken the following objective and hypothesis to study the types of soil in *Baglan* Tehsil, also to examine the soil properties for Agriculture planning and development in Research area, to identify the useful soil properties to agricultural planning and development of research area, to study agriculture planning and development with the help of soil properties.

Then these objectives can fulfill the hypothesis of healthy soil properties are helps to increase the yielding capacity of the soil, soil testing is used to facilitate fertilizer composition and dosage selection for land in agriculture, to better assess soil salinity, acidity, S, and mineral N status, breaking up any large cores or peds on a clean surface.

And without research methodology we cannot finding the results of research area also a hypothesis, that's why I have taken two research methodologies for study area is **Observation in the field or Soil survey work** and **Laboratory measurements, Questioner, Primary data, as well as Secondary data.** And using this technique

generally at least 04 single samples per farm must be taken with an earth boring tool (or spade) and combined to a mixed sample. The usual sampling depth is up to 20 cm in arable land or 10cm in pasture. Sampling is done at the rate of one sample for every two-hectare area. Undisturbed soil samples are obtained with a cutting cylinder.

(**Augers or Spade** - coring equipment is required to obtain samples).

The Geographical Study of the Main Causes of the River Floods in Maharashtra: Climate Change, Contraction of River, Sludge Accumulation

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Abstract

While farmers were satisfied with the good rainfall in Maharashtra from July to September 2020 & specially in "Marathwada & Vidarbha", torrential rains and flood in Kolhapur, Sangali, Chandrpur, & Marathwada areas have also caused severe loss to crops. The destruction of crops by farmers who patently fought alone during the CORONA – 19 crises has one again become a matter of concern. Crops like Groundnut, Soyabin, Urad, Cotton, Millet, etc. have been severely damaged. Although it is a relief for the 'Rabbi', the accumulation of water in the field & the erosion of the farmland will not make up for the loss.

Climate change, shrinkage of river basin & siltation are the main cause of floods & floods appear to be man-made. The appropriation & coordination of the huge data held by the National Institute of Hydrology shows how important it is in flood control and planning. It is equally important that the alignment of rivers & tributaries with the right slope go with the right slope. Otherwise the boundaries of the river banks expand & the water spreads far & wide on the both sides. The referendum on notifying rivers is also on the rise.

Even today, dams do not have much capacity to store the growing water reserves in the event of floods, considering this fact, water reservoirs can be made in that place. The constructions of dams at various places are a necessary process for this. An there is no such site available for large dams in the state now, the water literacy movement, which is trying to bring rural development & self – sufficiency through small projects, is now taking shape. In increasing public participation in water management, a family should contribute as much water as it needs in a year & save as much water as sludge.

The effect of water available per hector from a small catchment area is definitely greater than the water availability from a large catchment area. Therefore, the next period will be a planned journey as per Mahatmaji's call to go to the villages. Due to Jayakwadi, Marathwada is flooded & due to many big dams, the area does not feel the intensity of the flood for some time. This requires irrigation projects to be viewed as pilgrimage sites of course, there is no reason for anyone to complain about the need for continuous work on water storage, maintenaous & repair.

Study area:-

Maharashtra is a state in the western and central peninsular region of India occupying a substantial portion of the Deccan Plateau. The state of Maharashtra is located in between the coordinates (DMS) of $19^0 39'47.8080''$N & $75^0 18'1.0548''$E. Total area of the state is 307713km^2, 3rd rank in India. Maharashtra is the second-most populous state in India as well as the third-most populous country subdivision in the world, the total population is 126,189,673.As per the population and total area of the study area the density of population is 410/km^2. As per the 2011 census data literacy rate & sex ratio was 82.34% & 929/1000 respectively. The state is divided into 6 divisions and 36 districts. with the state capital being Mumbai, also the most populous urban area in India and Nagpur serving as the winter capital. The **Godavari** and the **Krishna** are the two major rivers and their sub-tributaries in the state.
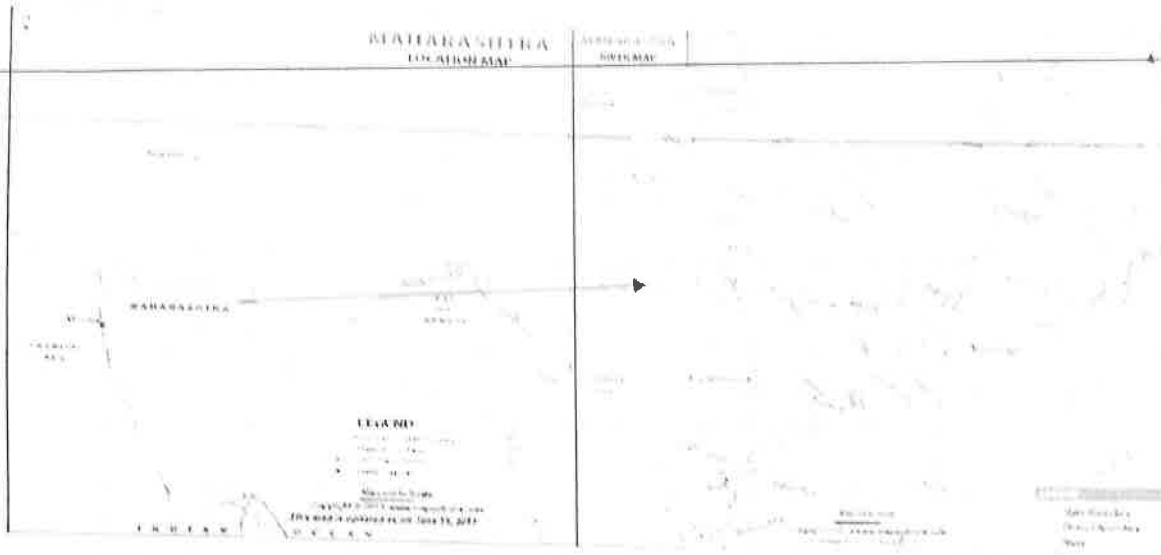
Introduction:-

A flood is an overflow of water that submerges land that is usually dry. Human changes to the environment often increase the intensity and frequency of flooding, for example land use changes such as deforestation and removal of wetlands, changes in waterway course or flood controls such as with levees, and larger environmental issues such as climate change and sea level rise.

Flooding may occur as an overflow of water from water bodies, such as a river, lake, or ocean, in which the water overtops or breaks levees, resulting in some of that water escaping its usual boundaries,[3] or it may occur due to an accumulation of rainwater on saturated ground in an area flood.

Definition of flood :- 1) "A rising and overflowing of a body of water especially onto normally dry land". (**Merriam-Webster**)

2) Flood is a term used to denote an enormous amount of water.

3) The situation caused when the water becomes uncontrollable is said to be flooded.

General Causes of Flood:-

1) **Massive Rainfall:** - Drainage systems help the drainage of excess water into reservoirs in an easy way. But in cases of heavy rainfall, the systems stop working. Thus flood is caused.

2) **Overflowing of the river :-** The people living along the river always have a risk of life from the overflowing of the Rivers. To prevent such a situation, a string of dams are built. However, if these dams are not managed properly, they may cause flooding and huge damage.

3) **Collapsed Dam:** - huge rainfall, the dams built begin to collapse. Thus, causing the flood situation to become even critical for the people living around.

4) **Deforestation:** - The cutting of trees in a reckless manner i.e. deforestation is also a major cause of man-made flooding. Trees prevent soil erosion and also the loss of crops. The vegetation is also enriched as a result of more and more trees. This also blocks the massive flow of rain, thus preventing flooding.

5) **Climate Change:** - The climatic changes caused due to human practices also add to the risk of flooding. Human beings cut trees in a large number, thus affecting the process of photosynthesis. Thus increased level of carbon-di-oxide in the atmosphere cause changes in

climate posing threats of natural disasters like floods etc.

A series of floods took place across the Indian state of Maharashtra in 2021. As of 28 July 2021, around 251 people have died and over 100 are still missing due to floods and landslides. Thirteen districts have been affected in western Maharashtra. Starting on 22 July 2021, Maharashtra saw heavy rainfall in many of its western districts. On 23 July 2021, NDTV reported that Maharashtra saw the highest rainfall in the month of July in 40 years. The most affected regions are the districts of Raigad, Ratnagiri, Sindhudurg, Satara, Sangli and Kolhapur.

In April 2021, Potsdam Institute for Climate Impact Research reported about climate change heavily impacting the monsoon seasons in India. The state of Maharashtra in India has several major river systems including those of the Narmada, Godavari, Tapti and Krishna rivers. All the rivers are monsoonal rivers.

Narmada River basin

The Narmada is a river in central India in Indian subcontinent. It forms the traditional boundary between North India and South India, and is a total of 1,289 km (801 mi) long.

Tapti River basin

The Tapti River (also Tapi River) is a river in central India. It is one of the major rivers of peninsular India with a length of around 724 km.

Godavari River basin

The Godavari river is a major waterway in central India, originating in the Western Ghats and flowing eastwardly across the Deccan Plateau between the states of Maharashtra and Andhra Pradesh, then crossing the latter state and turning to flow in a southeast direction until it empties into the Bay of Bengal through two mouths. Its tributaries include Indravati River, Manjira River, Bindusara River, Sabari River etc. Although the river arises only 80 KM. from the Arabian Sea, it flows 1,465 km to empty into the Bay of Bengal. The Godavari River has a drainage area of 313,000 km^2 in seven states- Maharashtra, Andhra Pradesh, Karnataka, Madhya Pradesh, Chhattisgarh and Orissa.

(Godavari River Drained Area in Seven State In India)

State	Area (km^2)	Percentage
Maharashtra	152,199	48.65%
Andhra Pradesh	73,201	23.40%
Chhattisgarh	39,087	12.49%
Madhya Pradesh	26,168	8.63%
Orissa	17,752	5.67%
Karnataka	4,405	1.41%

(Source: - en.wikipedia.org/wiki/Freshwater_ecology_of_Maharashtra)

Area (km2)

Legend:
- Maharashtra
- Andhra Pradesh
- Chhattisgarh
- Madhya Pradesh
- Orissa
- Karnataka

Values shown: 26,168 17,752 4,405 39,087
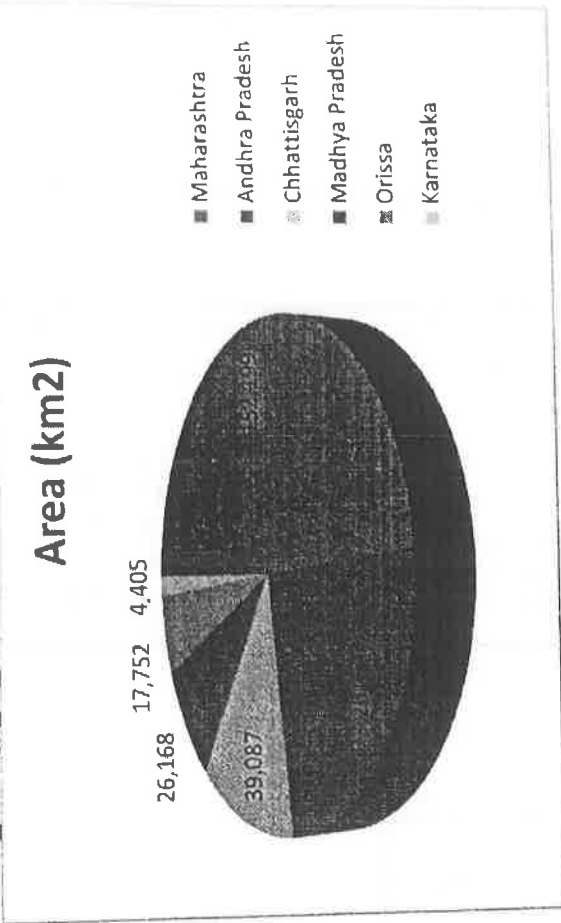
Krishna River basin

Krishna Basin extends over an area of 258,948 km^2 which is nearly 8% of total geographical area of the country. The flood is man-made. In the floods that hit the Krishna river in between 25 July to 11 Aug.2019 last year, the general public understands that there are 21 dams in the Krishna valley. Everyone released water from the dam at the same time & the flood came due to lack of planning. But that is not the case. Unprecedented rainfall caused by climate change is the cause, but just as important is our preparedness and ability to deal with this natural disaster.

Climatic Data in Maharashtra:-

(Division wise Monthly Rainfall in mm. of Maharashtra State for the Year 2020)

(Source :- Rainfall Recording and Analysis, Department of Agriculture Maharashtra State)

(Rainy Season Rainfall Frequency 2020)

Series 1
Series 2
Series 3
Series 4
Series 5
Series 6
Series 7

The flood is man-made. In the floods that hit the Krishna river in between 25 July to 11 Aug.2019 last year, the general public understands that there are 21 dams in the Krishna valley. Everyone released water from the dam at the same time & the flood came due to lack of planning. But that is not the case. Unprecedented rainfall caused by climate change is the cause, but just as important is our preparedness and ability to deal with this natural disaster.

Result & Discussion:-

While studying the flood, it was noticed that the cause behind the flood was the most important, change the nature, change in the season. In short, What we call climate change has led to a hug change in the overall intensity of rainfall & its duration. This change has been seen for a maximum of 10 to 15 years. This change has not been seen much before. Although this is a natural causes, flood are a man-made, because in order to control such flood, dams must also have the capacity to control the flood to some extent, absorb the water & then release the water. When the dam was built 40 to 50 years ago, it was not a concept. This means that even today, none of our dams have a separate storage capacity.

Our dam is built on the principle of sustainable water storage throughout the year in the face of drought. Therefore due to the dam, we cannot control the flood very well, we try a little bit, the first objection we get is that the water came out of the dams & flooded. So the answer is that there no flood control in the dam. But the indirect benefit of stopping any flood that comes down, no matter how long it takes to store water up to the dam. And the other real benefit is that with different help & experience in reservoir circulation as much flood as we can prevent & release in a controlled manner, the effort is definitely made. This is our first uses of dams.

The flood is man-made & it is about two causes. The dams in our Maharashtra are in the western part of the entire Sahyadri belt & the edge of the Sahyadri & the distance between them is very short. As a result, these dams fill up very quickly & there is very little time to present floods from here. it is the front of the river that reaches the borders of Satara, Sangali,Kolhapur & Maharashtra. Which we call the catchment area under the dam is 60%. No one has control over the rain that falls on that 60% area. This difference must be understood. However, the flood that comes down due to that 60% water is not within the limits of the dam. How to control that flood? There are villages along the river in the last 15 to 20 years, as well as cities, which are mainly as high risk of floods, and then there are villages like Kolhapur, Sangali, Kurundwad. About 22 to 23 villages in Kolhapur district & Sangali district have been equal affected. The only reason these villages have been affected is because of the huge growth of these cities in the last 15 to 20 years. Human settlements are located along the rivers. It is our historical tradition. The encroachments in the floodplain or in the potential flood zone caused major obstructions to the flow of the river. This created a flood situation, so the flood appears to be man-made.

If we take the example of 'Khadkwasla(Pune) Dam', the drainage capacity of Khadakwasla dam is about 1.25 Lakh Cusecs. We can leave the occasional water of such a determined capacity for the safety of the dam. According to him, the gate is closed. But today the situation is such that even if forty thousand causes of water is released, the 'Bhide' bridge goes under water, some parts of the bridge go under water & flood situation is created. So what will actually happen if a quarter of a lakh is released? What this means is that the rainfall measurement is the same as it was when the dam was conceived. But that much conceived water today cannot pass through the lower container. He has a narrowness somewhere.

Encroachment and river basins, constructions of buildings are not limited to flooding. Now, if we look at the area of Krishna river itself, the length of "Alampatti" is about 200km. from the source of the river to the part of the catchment area where the dam is located, there will be deforestation, some other development work, due to which some of the soil erosion caused a large amount of silt. The amount of silt in the river basin increased to such an extent that the original bottom of the river basin by 1.5 to 2

meters. As a result, the level of flooding naturally also went up by 1.5 to 2 meter, this means that for this flood, situation has to be done in the catchment area as well. The contraction of the river basin that you did. Narrowing the river basin increases the height of the flood. That is the reason.

Development & construction is another reason. The geographical structure of the actual pulse is also factor. What was found in the Sangali floods was that the part of the river which is 40km from Sagah city to the border of Maharshtra, has a large turn in the river. The slope of the river at the beginning has been halved since them. It is almost flat. The confluence of the river 'Varna & Panchganga' occurs due to the slowing down of the river. The water store there & it increase the amount of silt there. Moreover, water does not drain from there quickly. A huge temporary reservoir is form there and it takes a long sides naturally increase. This is the main reason why the floods lasted for 10-10 days.

Also, the Water Resource Department has drawn blue & red lines on both sides of each major river. It is the responsibility of the concerned local bodies & the district collector as well as the people to control the contructions within the line by putting them on the development plan of the city. The best example is that in Brazil, Canada & China the source of every stream & stream is protected by law. 200mt. if there is a stream, 300mt. if there is a big river. Don't let population happen. Due to the observance of these laws, all the rivers there have been flowing in good condition & natural condition for many years. There is no human intervention. The Central Government is now bringing the same law to us. It is also being drafted. It has been given to all the states for feedback. This law is being prepared in a good manner. The Maharashtra Water Resources Department has also submitted its opinion on it & the law will come into force soon. With this new central law, we can not only protect rivers & streams but also prevent their pollution. The most important thing is that the encroachment & development work that are taking place in the water area can be stopped.

The fact that the river is notified for food concept is equally important. The concept is notified for good concept is equally important. The concept of notifying the river is in accordance with the Maharashtra Irrigation Act, 1976. According to the separate laws for notified in the same ways as they are notified of land. But in the real sense, we have not completed its implementation. Notification of the river raise the question of ownership of the land in that river basin & who raise the bar regarding pollution & encroachment in the river. Therefore, the rules have not been made as they should have been for full implementation of the notification. So it has not been implemented. Instead of taking full notice of rivers by the Water Resource Department & taking procession of the lands in the rivers & river basins the ownership of the land should remain as it is with the Revenue Department. However, the ownership of water should be with the Water Resource Department & therefore, water, its availability, its utility & its use is still with the WRD. Many departments are involved in water pollution prevention, encroachment prevention, soil erosion prevention. Therefore, the entire department is expected to come together & work in harmony.

In the year 2005, Maharashtra passed the "Maharashtra Irrigation Management" by farmers Act. Irrigation management is expected to be done with the help of water use organization & alternatively with the help of farmers. But in the last 15 years from 2005 to date, we have not been able to fully implement it. This is because it is now accepted that there are some shortcomings in the law itself.

The first part of the implementation of law is that if a law is passed, its rules that have to be made, the specific procedure by which this work is to be done & enforced is not done & therefore effective implementation is not done. There are few successful examples like, Nashik Waghad Project, some water use organizations in the Kukde etc. These are just a few examples. This means that the required amount of water use has not been achieved.

On the other hand, if we look at the examples from other states, the irrigation system in Madhyapradesh, Gujrat & Asam is somewhat different. The purpose was very good in making rules & regulations regarding water use here, all these systems where handed over to the beneficiaries. But

before that, it was important to enable & focus more on the institution of water use, which is the basic tool. But this not only required them to provide financial assistance to the water use organizations, but also changed their mindset. That is why we have not had enough success in it.

According to the water supplied for agriculture, not only the use of water but also the planning of the crops should be done in an integrated manner. This mechanism should be enabled for maintenance & repair. Then came the two things, training & funding. These two things will go through the WRD, but to address the remaining shortcomings, the literacy center is now being experimented with at the government level.

Conclusion:-

From July 25 to Aug.11 last year, at least 125mm to 150mm of rainfall daily for 15 consecutive days. This time, however, it rained for two or three days & then the rain took a break. It rained again for two or three days. This means that the intensity of rainfall has decreased this year. The period of intensity has decreased. The water has got time to move forward.

Last year, from Dudhganga to Radhanagari,Panchganga, Koyna, Worna & even satara, it was raining heavily at the some time. This means that the average rainfall in what we call a free catchment area is 40 to 50mm last year. The rain had quadrupled. In addition, the total storage capacity of all the 21 dams in the area is 120 TMC. The total rainfall that fell last year resulted in a toal of 450 TMC. I mean, all would have filled his dam three times & emptied it again, so much rain fell. So it is wrong to say that the dam caused the flood.

Also a **Hydraulic Audit** of the river basin is required. Many different Kolhapur dams & barrages have been built in the river. But more than that, the bridges that were built on the National highways, especially the bridges built in Karnataka, were built according to their designed without taking any certificate of innocence form them, without giving any hydraulic data, thus creating a major obstacle to the river basin, for example, the people of Karnataka took out agitation & stopped the construction often bridge near Hippargi Dam & the administration there agreed to demolished the bridge & call it a new bridge.

In short, this type appears due to the lack of interstate coordination. Therefore, it seems necessary to do a Hydraulic Audit of each structure. Then it can be ascertained how much effect it can have according to the report of the **Wadnere** committee, an important point is that the backwater comes from the **Alampatti** dam seems to be wrong in the true sense of the word. The most important thing is to study our geographical situation, which is caused by encroachment, siltation & sand subsidence.

Terms :-

1) **DMS : Degree, Minutes, Second**
2) **WRD : Water Resource Department**
3) **TMC : Thousand Million Cubic feet**

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