



**Dr. Babasaheb Ambedkar Marathwada
University, Aurangabad.**

In Association with

**Chetan Shikshan Prasark Mandal's Vaijapur,
Arts Senior College, Aurangabad.**



**and
Katha U. K. (Britan)**

**ONE DAY INTERNATIONAL CONFERENCE
On**

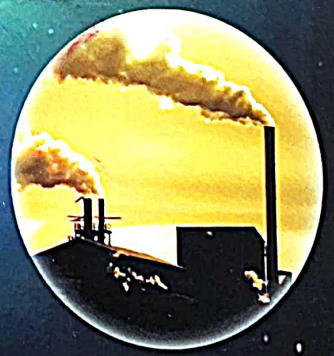
**GLOBAL ENVIRONMENT : ISSUES,
CHALLENGES AND SOLUTIONS
(An Interdisciplinary Approach)**

29 FEBRUARY 2016



ENGLISH

Part - III



Editor

Dr. Vinod Bairagi

Ajanta Prakashan

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Jaisingpura, Aurangabad.

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A Study of Water Resources Management in Agricultural Sector in the State of Maharashtra

Sangapal Prakash Ingle

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Abstract

Agriculture is the backbone of the Indian economy especially of Maharashtra and Water is the most important single requirement in growth of agriculture sector, plant, animal & human life. Water resources are sources of water that are useful or potentially useful. These are essential for agricultural output & adequate food supply for the people. Ground water is major water resource for it. Water resources management in agriculture sector can be examined at four scales, namely crop, field, catchment, & basin scales. The issues of interest differ from one scale to another with their complexity increasing as we move from the field to the basin.

There is essential policies perspective in agriculture for recognition of complexity & diversity of water resources management. These are addressing its needs to aware about the water situation.

Overall this study is the way of defining management of water resources, its present & overcoming obstacles and solutions in agriculture sector in Maharashtra.

Introduction

India is an agricultural country. Agriculture is the main occupation of India from thousand of the year. Agriculture is vital source of economic assistance and all round progress of our country. The Indian agriculture and allied sectors contributed approximately 13.9% of country's GDP during the year 2013-2014 & employs just a little less than 50 percent of the country's workforce. It is a most significant part of Indian economy. The agricultural sector of India has occupied almost 43 percent of India's geographical area. Water is the most important single requirement in growth of agriculture sector, plant, animal & human life. Water resources become a prerequisite in all productive activities. The critical role of water for intensive agricultural production hardly needs to be emphasized. The scope for further increase in the area under cultivation being limited, further growth in farm production has to be attained primarily through multiple cropping and higher yields per hectare. For this, controlled water supply becomes a prerequisite.

Water resources management implies the efficient management of available water resources so as to ensure optimum utilization. Its aims at harnessing the water resources for irrigation for stepping up of farm

production. Water resources management has different aspects like water management in flood-prone areas, surface water management and ground water management.

Here no need to explain the importance of water. It is the lifeblood for the existence of life on this earth. Rainfall in most parts of the country is confined mainly to the four months of June to September. During the remaining months, the water requirements have to be met from the ground or surface water resources. Surface water is provided by the flowing waters of rivers or from the still waters of tanks, ponds, lakes or artificial reservoirs. Irrigation from rivers is mainly through canals drawn for dams constructed across the rivers & is mainly seasonal. Ground water is a big source of irrigation in dry areas, here has importance of its management. In pumping out water & in taking it to the field, care should be taken to avoid wastages. The water lifting equipment must be appropriate & it must be in good condition. The water channel from the well to the field must be properly maintained. The illiterate farmers sometimes may be under the wrong impression that more yields are possible if water depth in the paddy field is high, without knowing its adverse effects. The farmers must be properly educated in the optimal use of water. A minimum space required in between wells of all categories should be kept in view while planning for new wells. This avoids one well drawing away the water potential of the other.

Water Resources

Earth's water	Fresh water	Fresh Surface water
Saline (Oceans) 97%	Icecaps & Glaciers 68.7%	Lakes 87%
Fresh water 3%	Ground water 30.1%	Swamps 11%
	Other 0.9%	Rivers 2%

(Source: Wikipedia)

Objectives of the study

- 1) To study the water resources management in agriculture sector in Maharashtra.
- 2) To find out the utilization of irrigated potential in the state of Maharashtra.
- 3) To find the problems & make some solutions on water resources management in the state of Maharashtra.

Research Methodology

This study is based on secondary data. It is collected from books, Magazines, journals, articles, research papers, internet, agriculture reports, other publications, etc.

Scope of the study

This study is limited to only management of water resources in the state of Maharashtra.

Water Resources Management in Agriculture Sector in Maharashtra

Agriculture in its broad sense includes not only crop production of various types but also plantation, horticulture, sericulture, livestock, dairying, poultry, forestry, fisheries, etc. Agriculture is the main source of living in a rural society.

Maharashtra is one of the most important states of India given its size and contribution to the nation's income and wealth. Agriculture is the mainstay of the state of Maharashtra. It is the main occupation of the people. Total 308 lakh hectares land in Maharashtra. Out of that 2/3 means approximately 225.6 lakh hectares of land is under cultivation. Again out of that approximately 80 to 85% land has arable type of farming, whereas 16% area has horticultural farming. Maharashtra is a state leading in drip irrigation, 60% of India's drip irrigation system is found in Maharashtra alone.

India constitutes around 16.5% of the world population, whereas the share of water resources is just 4% of world water resources. The main source of water is annual precipitation including snowfall and it has been estimated to be of the order of 4000 km. More than half of that returns to atmosphere by evaporation and seepage in to the ground. The balance water resource which occurs as natural run off in the rivers is estimated at 1,869 km considering both surface and ground water.

The average water availability in the state of Maharashtra is 163.82 km. According to inter-state water tribunal awards, the allotted quantity of water to the state is 125.94 km. Out of the five river basin systems, 55% of the dependable yield is available in the four rivers basins (Godavari, Krishna, Tapi and Narmada) east of the Western Ghats. These four river basins comprise 92% of the cultivable land and than 75% of the population in rural areas. Balanced 45% of state's water resources are from West Flowing Rivers which are mainly monsoon specific rivers emanating from the Ghats and draining into the Arabian Sea, which is not utilized due to geological constraints. The highly variable rainfall in Maharashtra ranging from 400 to 6000 mm occurs in 4 months period. No. of days varying from 40 to 100 days. Annual availability of water resources consists of 164 km of surface water & 20.5 km subsurface water. However state aggregates and averages are misleading figures as there is wide variation, both temporal and spatial in the availability of water in the state.

Maharashtra's share of inter-state rivers has been decided by various tribunals appointed by the government of India.

Rivers Basin in the state of Maharashtra

Sr. No.	Name of Basin	Geographical area (Mha)/ Percent of area W.R. to Maharashtra	Culturable area (Mha)	Annual Average availability (Mm3) with respect to state	75% Dependable yield (Mm3) Percentage	Permissible use as per tribunal award/ Committee report (Mm3)
1	Godavari	15.43/ 49.5%	11.25	50880	37300 (28.35%)	34185
2	Tapi	5.127 16.7%	3.73	9118	6977 (5.30%)	5415
3	Narmada	0.16/ 0.5%	0.06	580	315/ (0.24%)	308

Sr. No.	Name of Basin	Geographical area (Mha)/ Percent of area W.R. to Maharashtra	Culturable area (Mha)	Annual Average availability (Mm3) with respect to state	75% Dependable yield (Mm3) Percentage	Permissible use as per tribunal award/ Committee report (Mm3)
4	Krishna	7.01/ 22.06%	5.63	34032	28371(21.56%)	16818
5	West Flowing	3.16/ 10.7%	1.86	69210	58599(44.54%)	*69210
6	Maharashtra	30.80/ 100%	22.53	163820	131562 (100%)	125936

(Source: Water Resources Department, Govt. of Maharashtra)

The Water Resources Department of Maharashtra is done and doing the survey, design, investigation, construction and management, maintenance of water resources & hydropower projects in the river basins of the state. It is also working on area development programmes, research activities, water drainage schemes, dam safety, quality control, hydrology data collection and analysis, Kharbhumi schemes, etc. Till 2012 department constructed 3332 water resources project and thereby created water storage capacity of 33385 Mcum & irrigation potential of 48.61 lakh ha across state.

Water resources & land resources are closely linked as these together are basic to agricultural development. Any appraisal of water resources for agriculture would, therefore, be incomplete without an analysis of the quality, extent of availability of land to which irrigation can be applied for the maximum benefit. The National Commission on Agriculture, based on the changes in the pattern of land use that are envisaged, estimated that the net sown area is expected to rise from 140 million hectares in 1970-71 to 150 million hectares in 2000 AD and 155 million hectares in 2025AD.

It is estimated that 70% of worldwide water is used for irrigation, with 15-35% of irrigation withdrawals being unsustainable. An assessment of water management in agriculture sector was conducted in 2007 by the International Water Management Institute in Sri Lanka to see if the world had sufficient water to provide for its growing population. The report found that it would be possible to produce the food required in future, but that continuation of today's food production & environmental trends would lead to crises in many parts of the world. To avoid a global water crises, farmers will have to strive to increase productivity to meet growing demands for food, while industry & cities find ways to use water more efficiently.

Water resources management in agriculture sector can be examined at four scales, namely crop, field, catchment, & basin scales. The issues of interest differ from one scale to another with their complexity increasing as we move from the field to the basin.

Challenges

Water ensures food security, feeds livestock, maintains organic life and fulfils domestic and industrial needs. According to scientific angle in present the water situation has political, legal environmental, economic, social and even religious connotations. According to availability of water demand is more and the gap between in increasing day by day, it becoming a very dangerous issue in the world not only in India. In future per capita demand of water the availability of it's become less, so what is the solution? The solution only is to optimum utilization and save the water, management of rainfall water, makes dams, make awareness among people about the present and future condition of water.

Conclusions

The illiterate farmers sometimes may be under the wrong impression that more yields are possible if water depth in the paddy field is high, without knowing its adverse effects. This study found farmers not properly educated in the optimal use of water.

Irrigation sector in Maharashtra is the largest in the Country; the irrigation policy should assign first priority to complete ongoing irrigation projects which are in advanced stage of development. According to availability of water demand is more and the gap between in increasing day by day, it becoming a very dangerous issue in the world not only in India. In future per capita demand of water the availability of it's become less. There found lack of management of strategies for improving the performance of irrigation sector and also to solve water related disputes in the state.

Suggestions

Farmers must be educated and well knowledge about the use of water management.

The irrigated area should have suitable crop planning to achieve maximum production. There should be efficient system of measuring and controlling of water outlet. The drainage of irrigated areas should be properly planned so that is no danger of water logging or soil salinity. There should be take efforts of recycling & reuse of water for augmentation water resources. The government should provide sufficient funds for the water resources management sector in the budget of state.

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